FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 248. (No. 39, Vol. V.) SEPTEMBER 27, 1913. [Registered at the G.P.O. as a Newspaper.] [Weekly, Price 3d. Post Free, 3½d.

Flight.

Editorial Office: 44, ST. MARTIN'S LANE, LONDON, W.C.

Telegrams: Truditur, Westrand, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free.

United Kingdom ... 15s. 0d. Abroad ... ... 20s. 0d.

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EDITORIAL COMMENT.

Flying Over London.

The Home Secretary has issued an Order, under the powers conferred upon him by the Aerial Navigation Act, 1911, prohibiting the flying of aeroplanes over so much of the County of London as lies within a circle the centre of which is Charing Cross and the circumference is described by a radius of four miles in length. We do not know precisely what set of circumstances has impelled Mr. McKenna to issue this order, but we need hardly say that we are quite in agreement with its terms, though at the same time it does seem to us to be a trifle superfluous, inasmuch as the flying over populous places is already visited with quite serious enough penalties by the Royal Aero Club. We imagine that the sentence of suspension that would inevitably be pronounced by the Club weighs much more heavily in the minds of aspiring aviators than the somewhat nebulous possibility of police court proceedings, and a more or less severe monetary penalty. Indeed, we venture to say that were it not for the loyal manner in which the Club has fallen in with the expressed wishes of the authorities these prohibitions by departmental Order would be very much in the nature of a dead letter, and, as we pointed out at the time the panic Act of 1911 was passed, the work of regulation might very well have been left entirely in the hands of the Club.

Aviation in the Manœuvres.

At the time of writing, the British Army manœuvres have just commenced, and thus it is impossible for us to do more than review the happenings of the initial operations in the war between Greenland and Brownland on the one side, and Whiteland, as the opposing forces have been designated. Even in the first two days of the mimic war, aircraft have played a part which, while it may not have been in itself decisive, must have an almost decisive effect on the result. On Monday the aeroplanes employed with the Brown Army successfully located and theoretically destroyed the airship "Delta," which was in the act of reconnoitring Brown's dispositions. It appears to have been quite a pretty piece of work, but one which has, if it may be put that way, more of romance in it than of actual effect on the ultimate end of the operations. That well-known war correspondent and seasoned campaigner, Mr. Prevost Battersby, has sent to the *Morning Post* a really vivid impression of the work of the White aeroplanes, which is well worth quoting, since no words of our own could convey the first-hand lesson of the value of aircraft to the commander in the field half so well. Writing from the White headquarters, Mr. Battersby says:—

"Quite the most significant feature of the work done to-day was furnished by the Flying Corps. The morning was, as many mornings have been lately, shrouded in heavy mists, the valleys looking like white floods out of which the taller trees thrust out their heads. It was just the sort of day that seemed to promise the least results for aerial scouting. Yet before 10 o'clock Colonel Sykes, the commander of the Royal Flying Corps with the White force, had been able to communicate to its headquarters at Daventry most important information as to the position and movements of the main body of its foe. There are twenty-five aeroplanes and two airships with the Northern Army, and their headquarters is at Dunchurch, some eight miles to the north of Daventry. As a station it seems to be very favourable, there being a thick belt of trees on either side of which airships can be moored to obtain shelter from the wind, and the alighting ground is excellent. The station is connected by telephone with headquarters and equipped with wireless to receive any messages that the observers may send. Thus an observation made 50 miles away over the Chiltern Hills, from which the Southern Army is defiling, might within five minutes be repeated to the Commander-in-Chief of the Northern Army. General Monroe, sitting at a table in Northamptonshire with a map before him, would have been able, a few hours after the declaration of war, to enter upon it one after another the exact position of the columns advancing against him in Oxfordshire,

Bedfordshire and Buckinghamshire, as the voices of those flying scouts of his called back across the intervening space the movements of the masses of men and guns beneath them.

"A year or so ago the utmost he could have expected to hear, with the expenditure of much effort by men and horses, some twenty-four hours later would have been no more than a rough approximation to the reality, on which he might have hesitated to base his plans. We have thus had at the outset a striking illustration of what the command of the air may mean to a commander—a command that cannot be obtained by the mere possession of aeroplanes, but by the possession of more aeroplanes than one's opponent. The observers to-day were much bothered by the mist, especially about Oxford in the Thames Valley and along the edge of the Chiltern Hills, but none the less they were able to report with astonishing exactitude the position of the Southern camps and columns, and it looks as though army tents in the future will have to be made of green canvas on which ingenious designs may be painted to deceive the soaring eye."

There is nothing in this word-picture which needs emphasis from us—it speaks most eloquently for itself—save one passage, and that is the one in which it lays down that the command of the air cannot be obtained by the mere possession of aeroplanes, but by the possession of more aeroplanes than the enemy. Here lies the salient lesson of the whole thing—one that we earnestly hope will sink well into the minds of those who are responsible for our readiness for war. That the officers holding high command in the field will drive home this lesson with all the force at their command, we do not doubt after what we have read of the usefulness of aircraft, but the question is, does the War Office really appreciate the outstanding fact to which Mr. Battersby has called attention?

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The Aerial Derby. We have become so accustomed to hearing of great flights and to the almost day by day progress of aviation that we are a little apt to miss the real significance of the things that happen under our eyes. Unless we realise the truth of this, it is quite possible to fail entirely to grasp the real lesson of last Saturday's race for the Aerial Derby, which is, we conceive, that the sum of progress—especially in the pilots—during the past fifteen months is simply enormous.

True, we have not yet arrived at the stage when aeroplanes can set out on a race like this, with the absolute certainty of finishing, but if we are to trust the records of the race of a week ago, we are rapidly nearing that point, and the gap that separates the machine of last year from the one of this is far and away wider than we should have been able to grasp had there not been afforded us the means of comparison which the two races have given. When we think of the percentage of failures of last year and then contrast them with those of a week ago, it becomes amply evident that progress of no mean order has been made in the interval, although, as we have already remarked, it has been of so gradually progressive a nature that people have quite possibly failed to grasp the true inwardness of it. It is all very wonderful, and when we think that it is not at all too much to expect that the same relative amount of progress and improvement may with certainty be looked for during the twelve months to come, it leaves us wondering where the end of it all is likely to bring us. Who shall say that the dream of the enthusiast of the time when flying will be the normal method of human travel is so far-fetched after all? It is ill work prophesying, but even so it is hard to refrain from much in the way of speculation as to the future of this great and growing science of aviation and its ultimate bearing on the fate of nations.

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F. P. RAYNHAM.

BRITISH PILOT.

PRACTICALLY all the little band of pupils who were initiated into the art of flying upon the original Avro biplane, which it may be recalled was equipped with a 35 h.p. Green engine, have proved to be remarkably successful and versatile pilots, although perhaps their names are not so well known outside aeronautical circles as some others, principally because they have not gone in for flying of the more spectacular order. Among the Avro men was F. P. Raynham, and soon after securing his certificate in May, 1911, he became an instructor at the Avro school, flying both the Avro and also the Farman biplane which Messrs. A. V. Roe and Co. had built. At the beginning of last year he joined the Sopwith firm, and got through a great deal of flying on the Sopwith-Wright, Farman, and Howard Wright biplanes, among his successes being the winning of the Shell Trophy at Hendon, with the A.B.C.-engined Sopwith-Wright biplane. In July, 1912, he was engaged by Messrs. L. Howard Flanders, Ltd., and among his first duties was the delivery of a quartette of Flanders monoplanes at Farnborough, the machines being flown over from Brooklands. He also flew an Avro military biplane for the Royal Flying Corps from Brooklands to Farnborough, and piloted the Flanders and Coventry Ordnance biplanes at the Military Trials. Later he piloted the all-enclosed Avro from Salisbury Plain to Shoreham and Brooklands, while on a 60 h.p. Green-Avro, he finished second in the British Michelin Cup No. 1, his record being 7½ hours. Last April he rejoined Messrs. A. V. Roe and Co., since when he has delivered a dozen machines at either Farnborough or Eastchurch, and also had a lot of work on the 100 h.p. Avro waterplane at Brighton, as well as some exhibition work in various parts of the country, while on Saturday last he took part in the "Aerial Derby" and finished a very good fourth.

"THE HAWK."

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An International Match at Hendon.

TO-DAY, Saturday, the programme at Hendon includes the final of an International contest for the Hendon Trophy and £1,000 which was begun on Thursday. Great Britain is represented by Claude Grahame-White (M. Farman biplane), Gustav Hamel (Morane monoplane), United States by G. W. Beattie (Wright biplane) and W. L. Brock (Blériot monoplane), while France is represented by Verrier (Farman biplane) and P. Marty (Morane). The contest is made up of six events, namely, altitude, quick starting, alighting, cross-country and two speed races of 12 and 24 miles respectively. The quick starting, alighting and 24 miles speed test are set down for decision this afternoon. The various competitors will be distinguished by the national flags on their machines. Each country will score one point for each win.

To-day, Saturday, there will also be a Military cross-country Race for the Anglo-American Oil Co.'s Trophy, in which most of the Hendon airmen are to take part, including B. C. Hucks, L. Noel, Manton, Carr, Baumann, Brock and Slack. During the afternoon the Lord Mayor will present Mr. Gustav Hamel with the *Daily Mail* Aerial Derby Gold Cup and a cheque for £200, and the *Shell* Trophy and prizes to Mr. B. C. Hucks, the winner of the Aerial Derby sealed handicap, Mr. Barnwell, who was second, and Mr. Brock, who took third place.

The directors of the London Aerodrome will also present silver commemoration trophies to Mr. Barnwell, who finished the Aerial Derby contest within about two minutes of Mr. Hamel, and to Mr. F. P. Raynham and Mr. H. Hawker, who finished third and fourth respectively.

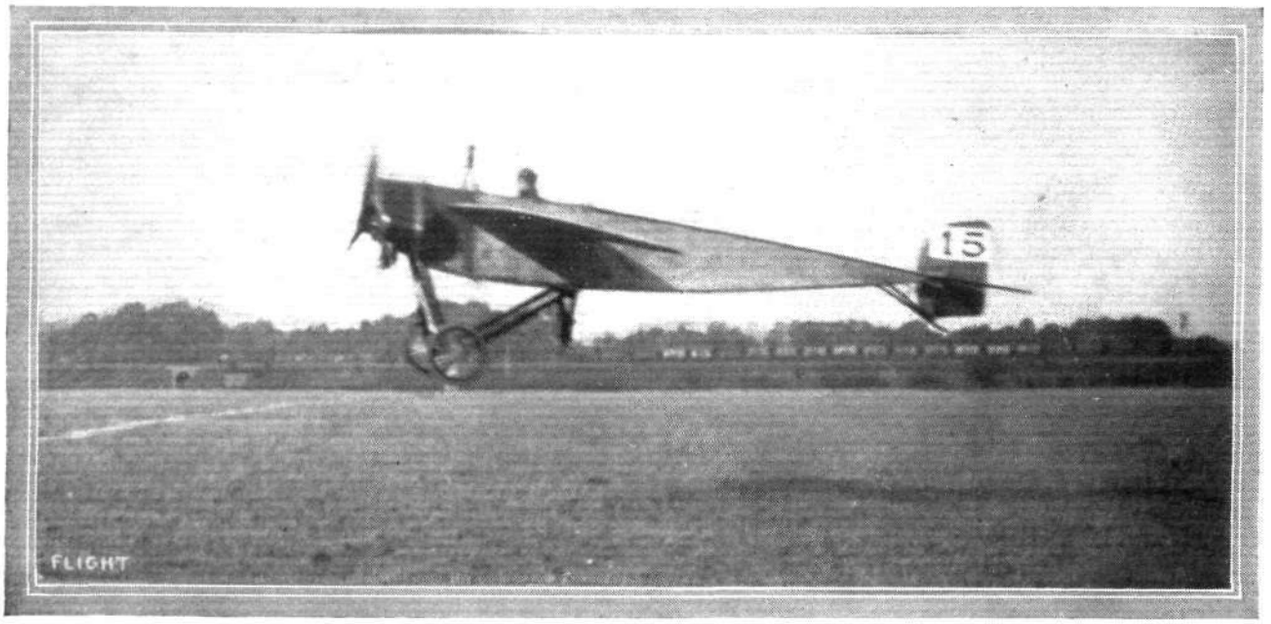
MEN OF MOMENT IN THE WORLD OF FLIGHT.

British Pilots.

MR. F. P. RAYNHAM.

THE AERIAL DERBY.

THAT the second Aerial Derby for the Gold Cup and 200 sovereigns presented by the *Daily Mail* would be a success was fully expected, but expectations never aspired to the magnificent race put up by the eleven competitors last Saturday. Whereas last year, on the occasion of the first Aerial Derby, four out of the seven starters completed the course, arriving with long intervals between them, nine out of eleven starters in this year's race arrived home within a space of twenty minutes. Furthermore, the race itself was devoid of accident, bar the slight mishap to Lieut. Porte's machine, referred to later; but, unfortunately, a very enjoyable day was



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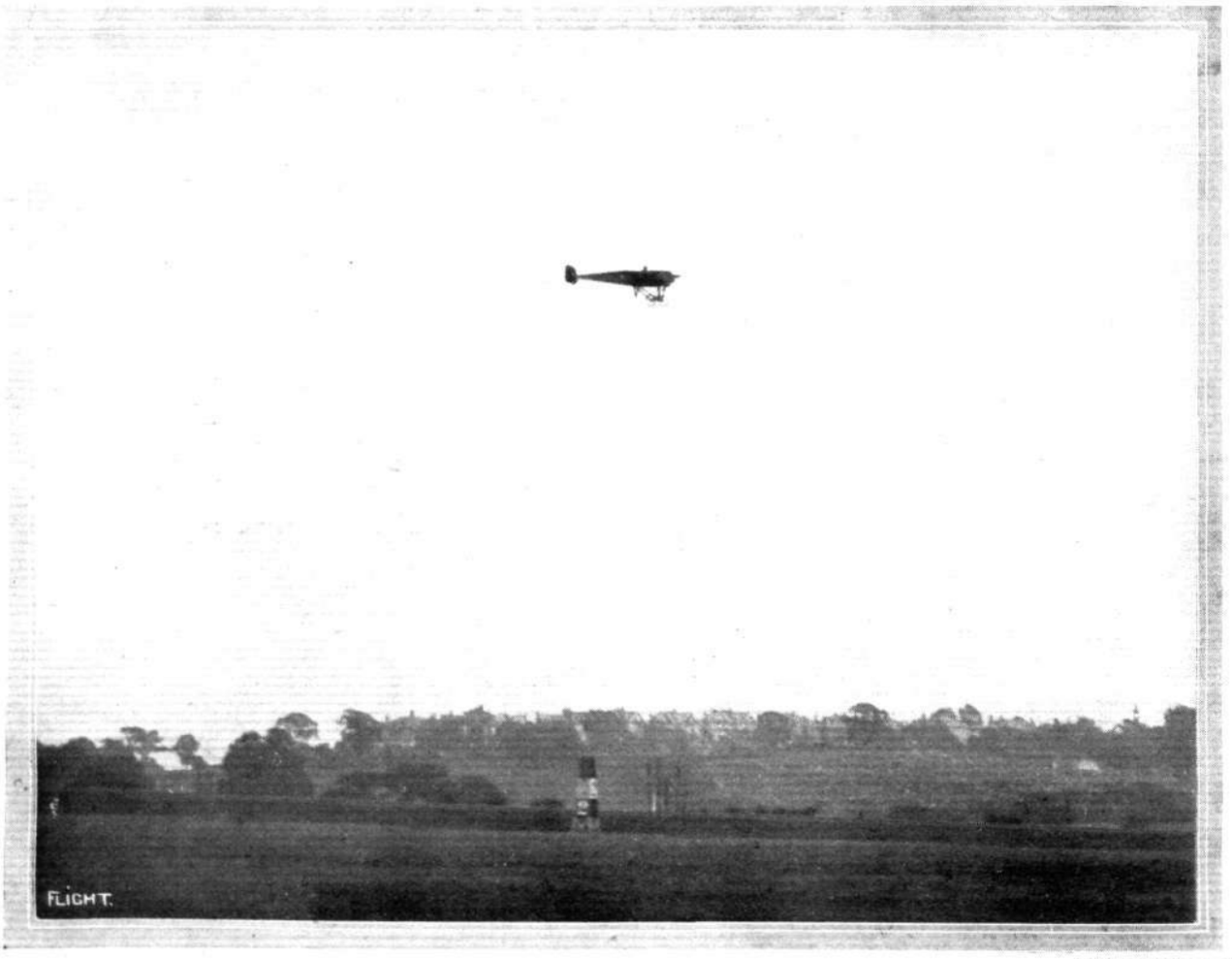
Hamel, the winner of the Aerial Derby, just getting away from Hendon Aerodrome.



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Gustav Hamel finishing and winning the Aerial Derby at Hendon on Saturday last on his Morane-Saulnier monoplane.

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A general view of the car and other enclosures at the Aerial Derby at Hendon Aerodrome on Saturday last, giving a general impression of the enormous number of the public who attended this splendidly-arranged function. This picture gives a faithful idea of the excellent arrangements made for visitors to this aerodrome, and the biplane passing in front of the stands is typical of the nearness with which the machines fly.

brought to an unhappy close by the serious accident to two very popular pilots—Mrs. De Beauvoir Stocks and Mr. Sydney Pickles, who were flying as passenger and pilot respectively in a Champel biplane at Hendon late in the evening.

Up at the aerodrome preparations for the great event were in full swing by the time the first instalment of the "gate" was admitted at about noon. It was shortly after this time that a monoplane was seen approaching from the south-west, eventually proving to be the Martinsyde, piloted by H. Barnwell, who had left Brooklands some 18 min. previously in company with H. Hawker on the Sopwith biplane, and F. P. Raynham on the Avro biplane. A little while after Barnwell landed in the aerodrome one of the biplanes was observed, but it was not until it was almost overhead that we saw it was Hawker's Sopwith; Hawker was accompanied by two passengers. A look-out was then kept for the Avro, which, however, was nowhere in sight. Some uneasiness was felt on account of its non-appearance, for it was one of the favourites for the race. Just before 1 p.m. Philippe Marty made a test flight on the 50 h.p. Morane-Saulnier monoplane, and immediately after the Avro was sighted, some 3,500 ft. up.

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Mr. Barnwell, who secured second place, with only a couple of minutes' interval, on the Martinsyde machine in the Aerial Derby.

Raynham made a beautiful spiral descent, and explained his late arrival as being due to their having had to go back. He, also, carried two passengers, Mr. H. Lane and the former's fox terrier, which seemed to be rather bored, having made several attempts to "get out and walk" during the journey. Three more imposing and business-like machines than the Avro, Sopwith, and Martinsyde one could not wish to see.

The first two were very similar in appearance, yet there were

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THE AERIAL DERBY, HENDON.—View of the machines in line ready for the start.

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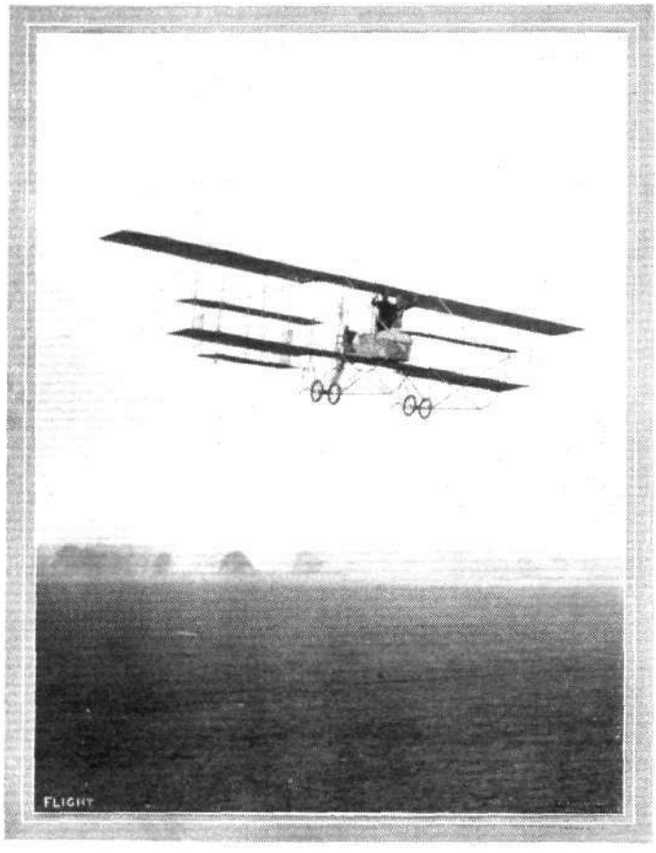
The arrival of the Champel biplane flown by Mr. Sydney Pickles, with Mr. Lawford as passenger, at the Hendon Aerodrome, on Saturday, whilst the competitors in the Aerial Derby were absent on their race round the circuit. On the left is seen the Grahame-White 5-seater biplane, with a mechanic sitting on each wing tip.

marked characteristics. The Sopwith was practically the same as the "round Britain" machine described in FLIGHT some few weeks back, except that a wheel and skid landing chassis was fitted and the front of the *fuselage* adapted for the 80 h.p. Gnome engine.

The Avro differed from previous models in that the top plane was staggered well forward, and a new landing chassis was fitted. The latter is, we think, a distinct improvement on the old type. The central skid is retained, but, instead of the laminated-spring axle, one of tubular steel is employed, and the outer ends of the same are connected to the *fuselage* by telescopic steel tubes carrying elastic shock-absorbers enclosed in neat streamline cases. The *ailerons* may be said to warp rather than hinge, but otherwise the machine follows Avro practice.

The Martinsyde was practically identical to the one exhibited at the last Aero show and to that flown by Gordon Bell recently. Mechanics were hard at work on the Grahame-White five-seater biplane, which had been fitted with a new 120 h.p. Austro-Daimler engine, but as there had been very little time to tune up the latter, we were told that it would be very unlikely the huge biplane would be a starter in the Aerial Derby. Louis Noel, who was to have been her pilot, was looking very dejected, and shortly after 2 p.m. he endeavoured to soothe his disappointment by indulging in a fine exhibition flight on the overhauled "G.-W."-Maurice Farman. Marcus D. Manton came out a little while after on the 50 h.p. new-type "G.-W." 'bus, with "Daily Mail" painted underneath the lower planes, and proceeded to put it through a process of the usual high circulation, with several right and left hand spirals. Pierre Verrier next came out on the Aircraft Co.'s Maurice Farman, accompanied by a passenger, and whilst circling the aerodrome both pilot and passenger rather took our breath away by standing up in the *nacelle* and waving their arms about.

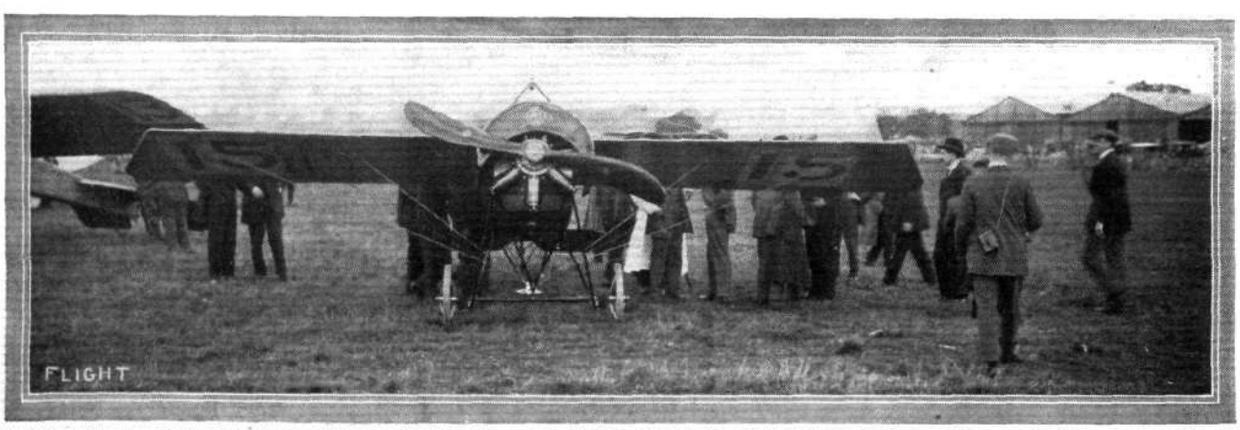


A demonstration of the stability of the Maurice Farman biplane at Hendon Aerodrome.—Pierre Verrier and his passenger standing up and holding their hands above their heads, meantime the machine being entirely uncontrolled.

Whilst this astonishing demonstration was being made Claude Grahame-White and W. Birchenough ascended in the Maurice Farman and "G.-W." biplanes respectively. W. L. Brock then made a test flight on his 80 h.p. Derby-Blériot, and passenger flights were made by Manton on the "Daily Mail" 'bus and Noel on the Maurice Farman. By this time it was nearly 3 o'clock, and the enclosures were already well filled, but the influx of visitors had by no means ceased.

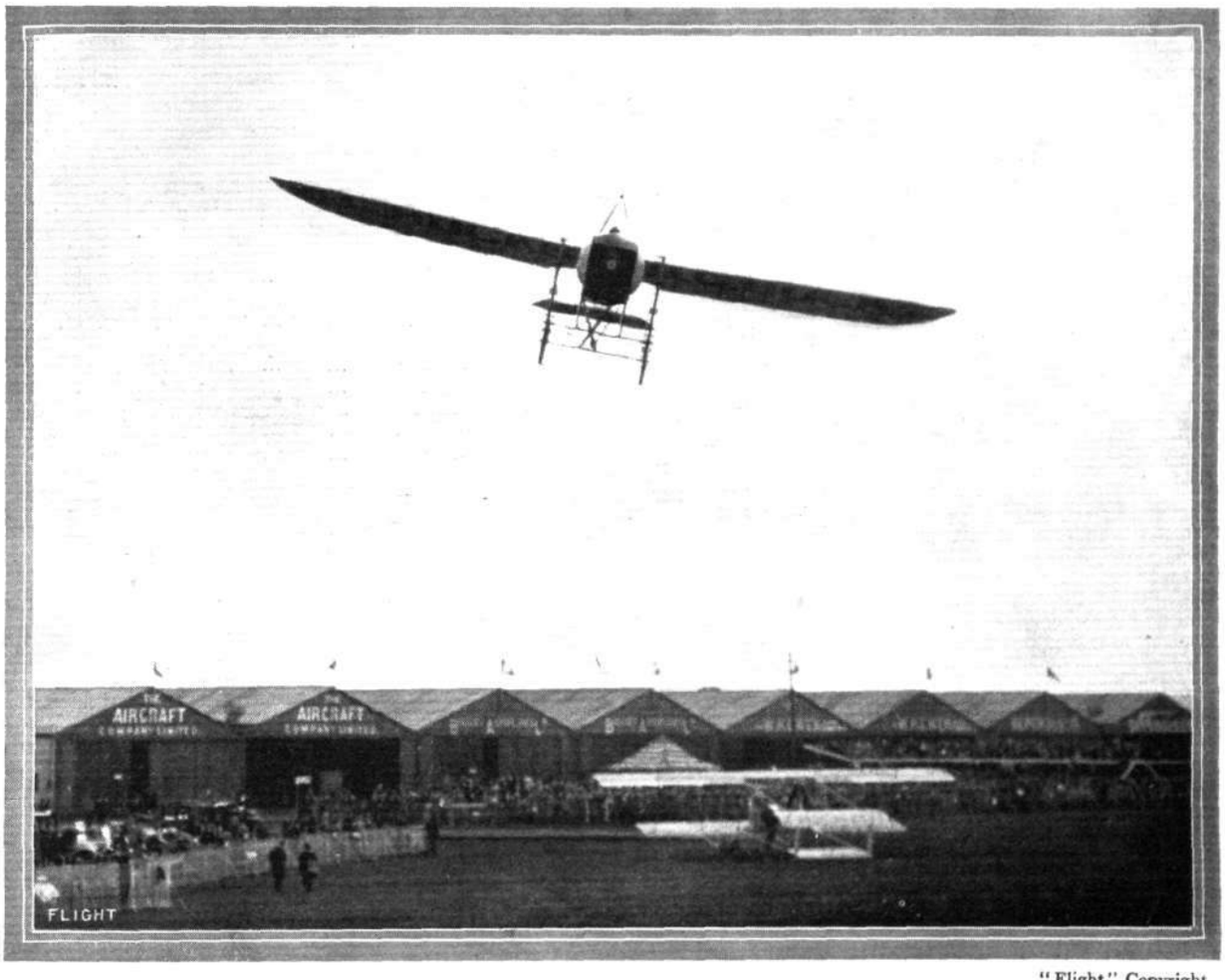
At about 3 p.m. the unmistakable form of a RE 1 biplane was observed approaching the aerodrome at about 3,000 ft. up. When over the railway the pilot, who was accompanied by a passenger, started a spiral descent, but instead of landing across the aerodrome towards the centre, the biplane made a bee-line for the enclosure near the Willows airship shed, a run of not more than 400 yards. The wind being behind the biplane, the pilot was unable to bring the machine to rest before they reached the wooden fence of the enclosure, into which they crashed. The chassis gave way, bringing the biplane over on to its nose and left wing, which was badly smashed. Fortunately, the pilot, Ronald C. Kemp, and his passenger were unhurt, but, nevertheless, it was an unfortunate ending to an otherwise successful journey from Farnborough. A few more exhibition flights, including some by Beattie on his Wright biplane and a demonstration equal to one of Chevillard's by Pierre Verrier on the 80 h.p. Henry Farman, took place before final preparations were made for the start of the great event. Such an animated scene had not been witnessed since the Circuit of Britain. The field was literally swarming with aeroplanes, pilots, officials, mechanics, reporters, photographers, and others. There were no fewer than 18 aeroplanes scattered around No. 1 pylon, including the Derby flyers. Messrs. Claude Grahame-White, R. T. Gates, and Capt. Tyrer were working like niggers, and always seemed to be in every place.

On the stroke of four o'clock Mr. Reynolds let fall his flag, and E. Baumann on the 60 h.p. Caudron started off on the 95 mile race. At intervals of one minute the others followed, Verrier on the Henry Farman with a quick get off, and accompanied by a photographer; W. L. Brock on the Blériot; B. C. Hucks, who leapt into the air and turned out of the aerodrome right away; P. Raynham on the Avro; H. Hawker on the Sopwith, also turning out of the aerodrome very quickly and receiving a round of applause as he passed over the enclosure; P. Marty on the 50 h.p. Morane-Saulnier; R. Slack (minus his moustache, evidently to reduce head resistance) on a similar mount of 80 h.p.; H. Barnwell, who got away with a roar on his huge Martinsyde; and last, but by no means least, Gustav Hamel on his 80 h.p. Morane-Saulnier with clipped wings. There was a feeling of apprehension all round as we waited for Hamel to start, for he had cut down the wings of his Morane-Saulnier from 30 ft. 6 ins. to about 20 ft., if not less, and some of us had seen what had happened at Eastchurch when the Gordon-Bennett was held there,



GUSTAV HAMEL'S MORANE-SAULNIER ON THE STARTING LINE FOR THE AERIAL DERBY ON SATURDAY.—In this photograph the small wing span of this racing machine can be appreciated.

when a similar operation was performed on the Blériot Hamel flew. However, as the flag fell he shot forward, and got into the air with no apparent difficulty. That he was the favourite there was no doubt, for as he got away cheer after cheer rent the air. Many of the machines remained in view together for some time, but eventually all passed out of sight. As soon as all the competitors had got away, Beattie on the Wright, Manton on the "Daily Mail," and Birchenough on the "G.-W." 'bus got into the air one after the other. Noel then got into the pilot's seat of the "G.-W." char-à-banc, and, after taking aboard Claude Grahame-White, J. D. North, R. H. Carr, and a mechanic, was soon flying with the other machines in the air. Presently we observed two of the passengers climb out of the *nacelle* and make their way along the lower planes to the respective wing tips, where they sat down with their feet dangling underneath. The two other passengers in the meanwhile stood up and moved about in the *nacelle*, and yet the 'bus was flying steadily as ever. After this interesting demonstration, Noel ascended in the Maurice Farman, later handing it over to Grahame-White, Barnwell was 55 secs. behind, which placed him second, 2 mins. 55 secs. after Hamel on flying time. Both machines were surrounded immediately they landed, especially Hamel's, and photographs were taken galore. After an interval of about four minutes, two more machines were seen approaching, this time biplanes. They were the Avro and Sopwith, and although the former got in first, Hawker had reduced his interval of one minute between them at starting to 23 secs., thus obtaining third place by 37 secs. flying time. Nearly four more seconds elapsed before two more monoplanes arrived; they were both Blériots, but it was not until they crossed the aerodrome that we saw Hucks was leading Brock. The next man home was Slack, 3 mins. 5⅘ secs. after Hucks, and having thus reduced his four minutes start to Hucks he obtained fifth place, Hucks and Brock being 6th and 7th respectively. Marty came in some five minutes after Slack, Verrier following him about four minutes after. There still remained Baumann and Lieut. Porte to be accounted for. The former had, we soon ascertained, descended



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A good picture of B. C. Hucks giving exhibition flights at Hendon on Saturday.

Birchenough, on the "G.-W." 'bus, and Beattie, on the Wright, being up at the same time. Several more exhibition and passenger flights were made by the various pilots, including a fine high flight by F. Goodden on the 35 h.p. Caudron and another demonstration on the "G.-W." char-à-banc. Shortly after 5 o'clock a biplane was seen approaching from the south-west, and many thought it was Verrier returning, having abandoned the race. As the biplane got nearer, however, it was seen that, while similar to a Henry Farman, it had a different tail. The machine descended by a number of highly banked right and left hand spirals, and when it came to rest by No. 1 pylon we saw it was the Champel biplane, with a 100 h.p. Anzani engine. The pilot and passenger turned out to be two former Hendonites—Sydney Pickles and Eric Lawford. They had come from Brooklands in about 20 mins. to see the finish of the Aerial Derby. They had not long to wait, for two specks were observed out over Mill Hill, and then the excitement commenced. The specks rapidly evolved themselves into Hamel's tiny monoplane and Barnwell's large Martinsyde — it was like a hawk chasing a sparrow. At 5 h. 26 m. 47 s. Hamel crossed the line to the accompaniment of frantic cheering. outside Kempton owing to engine trouble, but it was not until late in the evening that any news of Porte came to hand. It appeared that he had descended three miles from Epping to ascertain his whereabouts, his compass having gone wrong, and on starting the engine, those helping to hold the machine let go, with the result that the monoplane commenced to do circles round the field on its own account with Lieut. Porte clinging to one of the wings, eventually turning right over, smashing the propeller and wings.

As soon as the excitement caused by the arrival of the competitors had subsided somewhat, some more exhibition flights were put up, and Barnwell and Hawker returned to Brooklands. The evening was by then ideal for flying, and although many of the visitors had been there from an early hour, a large number lingered behind watching the various machines performing evolutions in the dusk.

It was then that the unfortunate accident previously referred to took place. Sydney Pickles had been giving some remarkable exhibitions on the Champel biplane, making exceptionally highly-banked spirals. He was about to ascend with Capt. Tyrer, when Mrs. Stocks expressed a wish to go up, and so took her place in the passenger's seat. They made a beautiful high flight, and all went

well until the latter part of their descent. A final series of spirals were made over the paddock, the first of these being at about 100 ft. up; a second spiral was made and then a third, which terminated in a sudden dive from about 60 ft. to the ground, just behind the megaphone box. Fortunately there were but few people on the spot where the aeroplane struck, although but a short time before many people and cars were in the exact spot. The unfortunate pilot and his passenger were quickly removed from the wreckage and taken to the London Sick Asylum close at hand, and later it was announced that Mrs. Stocks, who was unconscious, was suffering from concussion and injuries to the back, and that Mr. Sydney Pickles had fractured his leg and had other injuries. Thus one of the most eventful Hendon aviation meetings was brought to a sad termination. As we go to press we learn that Mr. Pickles was making as good progress as can be expected, but we regret to hear that Mrs. Stocks had not recovered consciousness.

Progress of the Race along the Course.

1st Control, Kempton Park.—The first to round the "pylon" was Brock, Raynham and Verrier following close behind, with Hucks overtaking them with a tremendous spurt of speed. Hawker was the next to pass, and Barnwell, Slack, and Marty followed a few minutes after, Hamel rapidly overhauling them. The last to appear was Lieut. Porte. Baumann, although he came in sight, landed about half a mile away.

2nd Control, Epsom.—Raynham was leading Brock by ½ min., Hucks and Hawker came round together ½ min. after. Then at intervals of about a minute followed Verrier, Barnwell and Hamel together, Slack, Marty, and Porte.

3rd Control, West Thurrock.—Raynham was still leading, but Hamel had caught up and was only ½ min. behind. Hawker came next 1½ mins. after with Barnwell 1 min. behind. Then followed Hucks, Brock, Porte, Slack, Verrier, and Marty. It was after this control had been passed and near Romford that an exciting incident occurred to Hamel. The tap on his petrol pipe broke loose and fell to the bottom of the *fuselage*, petrol in the meanwhile squirting out all over the unfortunate pilot. When Hamel found out what had happened he tried to get at the tap in order to replace it but it was just out of reach. There was nothing for it but to place his finger over the hole in the pipe, which he could just manage, and so continue his journey in a somewhat awkward position. In the meanwhile the monoplane, which required very delicate handling, was tossing and dipping, and Hamel got a bit out of his course, but he soon picked it up again, and getting used to his awkward position quickly overhauled his rivals who had got ahead.

4th Control, Epping.—Barnwell obtained the lead here, Raynham and Hawker following very close together 1 min. after. Hamel came next rapidly making up for lost time. Brock and Hucks arrived close together immediately after. After an interval of 3 mins. Slack passed with Marty and Verrier a couple of minutes behind.

5th and Last Control, Hertford.—Here Hamel drew abreast of Barnwell, afterwards obtaining the lead. Raynham and Hawker followed close behind, Hawker slowly gaining. Then at short intervals the two pairs of Blériots and Morane-Saulniers passed, Hucks and Slack being the first of each respective pair. The last man to pass was Verrier.

We append a table giving the time and speeds of the competitors, and also a table showing the results of the Shell sealed handicap run in connection with the race. (Prizes:—£100, £75 and £25).

Aerial Derby Round London (95 miles).
Gold Cup and £200 presented by the *Daily Mail*.

Place.	Pilot.	Engine and Machine.	Time.	Speed.
		h.p.	h. m. s.	m.p.h.
1	Gustav Hamel	80 Gnome-Morane-Saulnier* ...	1 15 49	76
2	H. Barnwell...	120 Austro-Daimler-Martinsyde*	1 18 44	72·5
3	H. Hawker ...	80 Gnome-Sopwith†	1 25 24	67
4	F. P. Raynham	80 Gnome-Avro†	1 26 1	66·5
5	R. Slack ...	80 Rhone-Morane-Saulnier* ...	1 29 59	62·5
6	B. C. Hucks...	80 Gnome-Blériot*	1 30 53⅘	63
7	W. L. Brock	80 Gnome-Blériot*	1 32 29	61·5
8	P. Marty ...	50 Rhone-Morane-Saulnier* ...	1 35 51⅘	59·5
9	P. Verrier ...	80 Gnome-Henry Farman† ...	1 45 7	54

* Monoplanes. † Biplanes.

Shell Sealed Handicap.
Held in connection with the Aerial Derby.

Place.	Pilot.	Handicap.	Handicap Time.
		m. s.	h. m. s.
1	Hucks...	19 0	1 11 53⅘
2	Barnwell	6 39	1 12 5
3	Brock	19 57	1 12 32
4	Hawker	12 10	1 13 14
5	Raynham	11 43	1 14 18
6	Hamel	scratch	1 15 49
7	Verrier	29 8	1 15 59
8	Slack	5 4	1 24 55
9	Marty	10 46	1 25 5⅘

"Flight" Copyright.

Mr. Gustav Hamel, the winner of the Aerial Derby, in his Morane-Saulnier. Standing by the machine is Mr. "Shell" Cates, through whom the splendid cup and prizes were given for the sealed handicap.

The Shell Trophy, which was presented by the British Petroleum Co., Ltd., the distributors of "Shell" motor spirit, for competition in the sealed handicap in connection with the London Aerial Derby held last Saturday.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Gordon-Bennett Aviation Race.

THE Gordon-Bennett Aviation Race takes place at Rheims on Monday, the 29th inst. Members desiring to attend are recommended to take ordinary return tickets, which are available for 30 days, £4 17s., First Class, and £3 10s., Second Class. The train service is :—

Victoria ...	dep. 11 a.m.	Charing Cross	dep. 2.5 p.m.
Rheims ...	arr. 8.12 p.m.	Rheims ...	arr. 10.13 p.m.
(*Via* Calais.)		(*Via* Boulogne.)	

Several countries will be represented in the Race, and there is a possibility of Mr. Gustav Hamel taking part as the representative of Great Britain.

There is every possibility that the speeds which will be accomplished in this Race will surpass anything yet recorded, as some of the French aeroplanes have already exceeded 200 kilometres per hour.

Several Members of the Club will be going over, including Mr. H. DelaCombe, Mr. C. Grahame-White, Mr. Frank K. McClean, Mr. J. H. Nicholson, Mr. G. Holt Thomas, and Mr. H. E. Perrin (Secretary).

Paris-London Race.

The regulations for this Race will be discussed at a joint meeting of representatives of the Aero-Club de France and the Royal Aero Club at Rheims, on Saturday, the 27th inst. The representatives of the Royal Aero Club attending the meeting will be Mr. Frank McClean and Mr. H. E. Perrin (Secretary).

Kent Automobile Club at Eastchurch.

On Saturday last the Members of the Kent Automobile Club, numbering about 170, visited the Flying Grounds of the Royal Aero Club at Eastchurch. The various aeroplanes were inspected and the visitors were also shown round the works of Messrs. Short Bros. During the afternoon exhibition flights were given by the Naval Officers, and a large number of passengers were taken up by Com. C. R. Samson, R.N., and Mr. Frank K. McClean. The visitors were afterwards entertained to tea by the Royal Aero Club.

Duration Records at Hendon.

On Monday last, the Grahame-White biplane, fitted with a 120 h.p. Austrian Daimler, piloted by Mr. Louis Noel, and carrying seven passengers, made a flight of 17 mins. 25⅘ secs., at the London Aerodrome, Hendon. The total weight of the pilot and seven passengers exceeded 81 stone. The flight was officially observed by the Secretary of the Royal Aero Club, whose report will be considered by the Committee at its next meeting.

Michelin Competitions.

Intending competitors are again reminded that the Michelin Competitions close in October. The Regulations for the £500 prize have been slightly amended and are included in these notices. The closing date is October 31st, 1913. The closing date for the £800 Prize is October 15th, 1913.

The British Empire Michelin Cup No. 1.

(*Under the Competition Rules of the Royal Aero Club.*)

The Michelin Tyre Company has presented to the Royal Aero Club of the United Kingdom, for competition by British aviators, a trophy of the total value of £500.

Annually, for five years, a replica of this trophy, together with a sum of £500 in cash, will be given to the successful competitor. This trophy will be competed for under the following conditions :—

CONDITIONS.

1. The winner for the year 1913 shall be the competitor who shall have accomplished the longest distance on an aeroplane in flight round the course, Brooklands and Hendon, on any day up to October 31st, 1913.
2. Flights shall be made between 7 a.m. and one hour after sunset.
3. No replenishments of oil, fuel, etc., will be permitted.
4. No repairs may be carried out after a start has been made.
5. Competitors shall make periodical compulsory stops of not less than five minutes, with engine stopped, on completing an entire circuit of the course plus one section, *e.g.*, starting from Brooklands the competitor would pass Hendon, Brooklands, and alight at Hendon. His next flight would be from Hendon, passing Brooklands, Hendon and alighting at Brooklands, and so on.
6. Landing at any point other than a proper landing place terminates a flight, and the competitor will then be credited with the mileage of the sections which he has completed, in conformity with the regulations.
7. A minimum distance of 300 miles must be accomplished.
8. Starts may be made from any of the two points of the course.
9. The entrant, who must be the person operating the machine, must be a British subject, flying on a British-made aeroplane, must hold an Aviator's Certificate, and must be duly entered on the Competitors' Register of the Royal Aero Club.
10. The complete machine, and all its parts, must have been entirely constructed within the confines of the British Empire, but this provision shall not be held to apply to raw material.
11. An entrance fee of £1 must accompany every notification of an attempt, and at least three clear days' notice must be given to the Secretary, Royal Aero Club, 166, Piccadilly, London, W. A competitor must further deposit a sum of £10 on account of expenses, if any, of officials. Any balance not so expended will be returned to the competitor.
12. Should any questions arise at any time after the date of entry as to whether a competitor has properly fulfilled the above conditions, or should any other question arise in relation to them, the decision of the Royal Aero Club shall be final and without appeal.
13. A competitor by entering waives any right of action against the Royal Aero Club or the Michelin Tyre Co. for any damages sustained by him in consequence of any act or omission on the part of the officials of the Royal Aero Club or the Michelin Tyre Co., or their representatives or servants, or any fellow competitor.
14. The aeroplane shall at all times be at the risk in all respects of the competitor, who shall be deemed by entry to agree to waive all claim for injury either to himself or his aeroplane, or his employees or workmen, and to assume all liability for damage to third parties or their property, and to indemnify the Royal Aero Club and the Michelin Tyre Co. in respect thereof.
15. The Royal Aero Club reserves to itself the right to add to, amend, or omit any of these rules should it think fit.

The British Empire Michelin Cup No. 2, £800.

(*Under the Competition Rules of the Royal Aero Club.*)

The Michelin Tyre Company has presented to the Royal Aero Club of the United Kingdom for competition by British aviators the sum of £800, to which will be added a trophy to be retained by the winner.

The following are the rules governing the competition for the year 1913 :—

1. The winner for the year 1913 shall be the competitor who, on October 15th, 1913, shall have completed a prescribed circuit of about 279 miles on an aeroplane in flight in the fastest time, reckoned in miles per hour.
2. Competitors may select their own circuit of about 279 miles, but the start must be made from a flying ground approved by the Royal Aero Club, and the proposed circuit must be submitted to the Royal Aero Club before the flight is made.

The complete circuit must be accomplished without alighting.

3. The flight must be observed at each point named in the circuit by officials appointed by the Royal Aero Club.
4. A number must be prominently displayed on the aeroplane in places approved by the officials, and when flying round each of the points selected in the circuit, the aviator must fly sufficiently low so that his number may be easily verified by the official observer.
5. The circuit must be completed between the hours of sunrise and sunset, on any one day.
6. The entrant, who must be the person operating the machine, must be a British subject, flying on a British-made aeroplane, must hold an Aviator's Certificate, and must be duly entered on the Competitor's Register of the Royal Aero Club.
7. The complete machine, and all its parts, must have been entirely constructed within the confines of the British Empire, but this provision shall not be held to apply to raw material.
8. An entrance fee of £1 must accompany every notification of an attempt, and at least three clear days' notice must be given to the Secretary, Royal Aero Club, 166, Piccadilly, London, W. A competitor must further deposit a sum of £10 on account of expenses, if any, of observers. Any balance not so expended will be returned to the competitor.
9. Should any questions arise at any time after the date of entry as to whether a competitor has properly fulfilled the above conditions, or should any other question arise in relation to them, the decision of the Royal Aero Club shall be final and without appeal.
10. A competitor by entering waives any right of action against the Royal Aero Club or the Michelin Tyre Co. for any damages sustained by him in consequence of any act or omission on the part of the officials of the Royal Aero Club or the Michelin Tyre Co., or the representatives or servants, or any fellow competitor.
11. The aeroplane shall at all times be at the risk in all respects of the competitor, who shall be deemed by entry to agree to waive all claim for injury either to himself or his aeroplane, or his employees or workmen, and to assume all liability for damage to third parties or their property, and to indemnify the Royal Aero Club and the Michelin Tyre Co. in respect thereof.
12. The Royal Aero Club reserves to itself the right to add to, amend, or omit any of these rules should it think fit.

166, Piccadilly, W. HAROLD E. PERRIN, Secretary.

PEGOUD.

UPSIDE DOWN FLYING AT BROOKLANDS.

EVERY reader of FLIGHT, we may presume, has either already visited Brooklands to see Pegoud's marvellous feats in the air, or is arranging to do so this Saturday. We are under the necessity of discussing his visit before the event, but the happenings in France give us sufficient excuse for the anticipation of an extraordinary show. Human nature presents itself in many guises, but we venture to think that it does not often evolve a type so utterly full of nerve as Pegoud.

We say full of nerve for the very good reason that we mean by that just what most people mean when they say that a man has no nerves at all. There is a fundamental difference between nerve and nerves, and there is an equally fundamental difference between nerve and pluck.

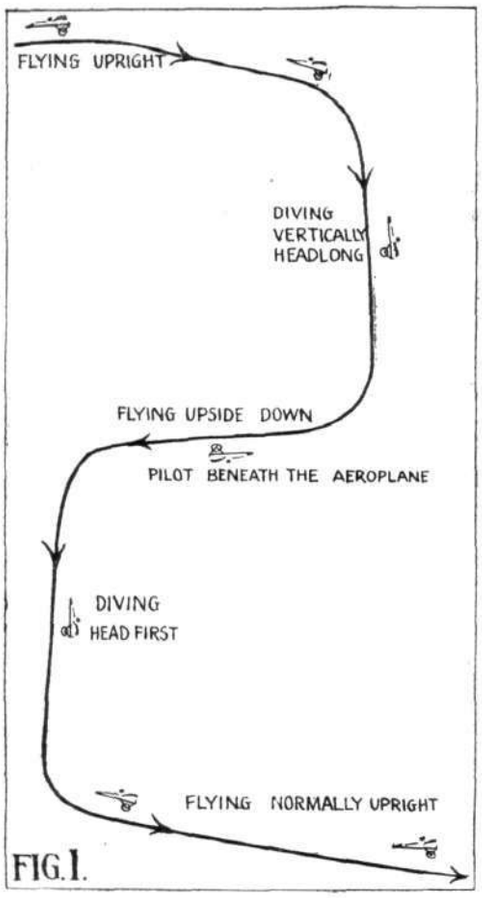

FIG. 1.

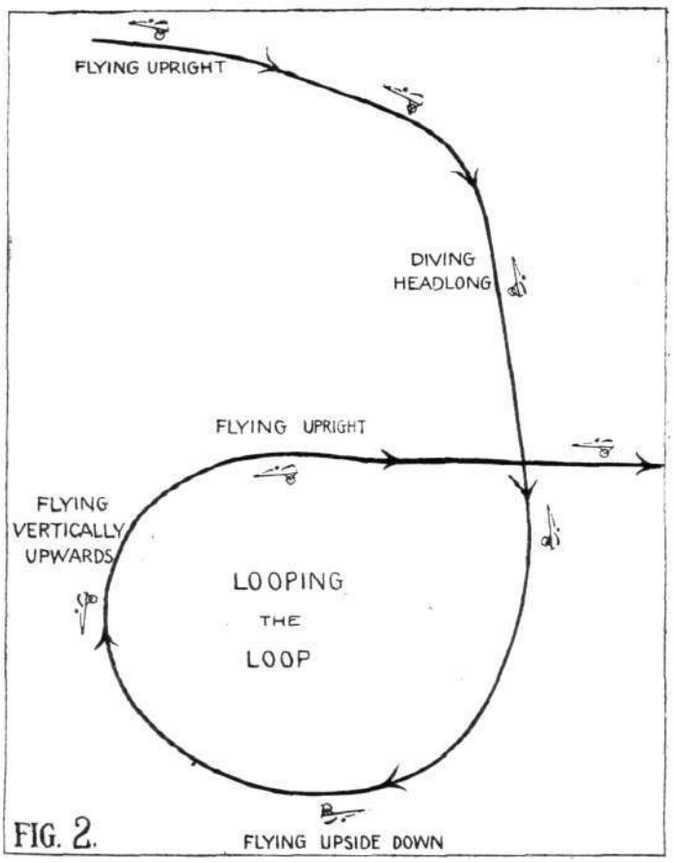

FIG. 2.

It was once said by a great soldier and an equally well-known sportsman, but for the moment we forget his identity, that "pluck took a man into danger, and nerve brought him out again," or words to that effect. It was a true saying anyway, for many a man, and many a woman too, for that matter, has pluck enough to take every sort of risk, but it is only the few who have the nerve to sit tight *and keep their eyes open* when they get there.

There are four definite and distinct feats in Pegoud's repertoire, which he may be expected to perform at Brooklands this week.

The first is illustrated diagrammatically in Fig 1, and in order to avoid confusion let us explain at once that all these diagrams are drawn in elevation. That is to say, they show the path of flight as it appears from the side of the machine. If this page of FLIGHT is held upright, then the diagram represents, as near as we can make it do so, what Pegoud may be expected to do against the background of the sky.

Of course, these manœuvres take place at a great altitude, and to a certain extent they are thus witnessed by the spectators from beneath, which tends, naturally, to foreshorten the apparent vertical distances.

Also it serves as a reminder that visitors to Brooklands are well advised to take field-glasses with them if they are accustomed to following moving objects in this way.

Reverting to Fig. 1, it shows an absolutely vertical dive followed by a "flattening out" *upside down.*

In an ordinary steep glide, the machine is "flattened out" so as to bring the pilot into an upright position once more: in his own special feat, however, Pegoud just tucks the head of his Blériot monoplane underneath him, and flattens out upside down.

Having flown upside down for some little distance, he then dives again, and flattens out the right way up. The whole manœuvre is controlled by the use of the elevator.

The second item on the programme is "looping the loop" with the pilot on the *outside* edge. Pegoud dives as usual in order to gain momentum, tucks the nose of his machine under him as he does for the upside down flying, and keeping his elevator lever well forward, he continues his circle until he comes to the top of the arc, where he is flying level, and right way up once more. This manœuvre is shown in Fig. 2.

The third contortion involves the use of the warp as well as the elevator. Falling vertically head down as

before and turning on to his back, Pegoud warps his wings to the utmost limits of the control and *rolls* over sideways into an upright position. This is shown, as clearly as it is possible to do so diagrammatically, in Fig. 3.

There remains yet one other "standard" accomplishment, which this remarkable pilot may be expected to repeat on Saturday. He climbs steeply upwards until his machine comes to a standstill, and so he provokes a deliberate tail slide; the machine slips backwards, but instead of falling to the ground its tail gradually "elevates" and swings the machine, pendulum-like, into a head down position. Pegoud allows this swing to repeat itself several times before he finally brings the machine into its normal line of level flight.

Now, setting aside for the moment the natural curiosity of the crowd in the sensational part of the performance, and in the prodigy of a man who does these things with such *sang froid*, what is their serious or scientific aspect?

Although we have not actually seen the machine for ourselves, we have from Mr. Norbert Chereau, general manager of Blériot monoplanes in England, an assurance that originally it was built as a standard 50 h.p. single-seater in 1911, and that the only alterations made for the purposes of these flights are as follow :—

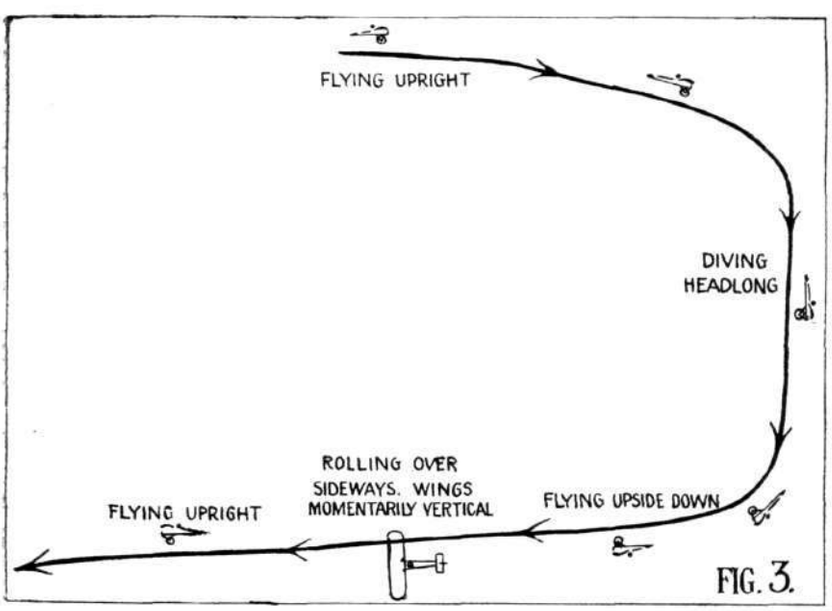

FIG. 3.

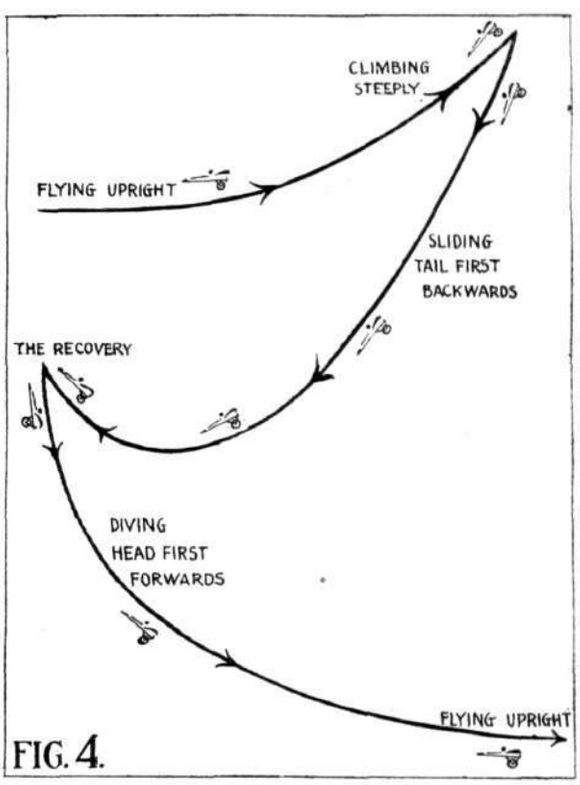

FIG. 4.

1. A new pylon made 12 ins. taller and placed 6 ins. further forward.

2. Substitution of the original tail by one used on a standard tandem-seated model.

Neither of these alterations affects the principle of the machine or its "natural stability." It is apparent that the purpose of the taller pylon is to set the top bracing wires to the wings at a less acute angle, and thereby to reduce the stress upon them. This is a very natural precaution in a machine that flies, so to speak, habitually on its back, and in which the top wires, therefore, so frequently take all the weight of the machine in the air. Ordinarily, the top wires merely support the weight of the wings when the machine is on the ground and their severest stress comes, generally, from a bumpy landing. On Pegoud's Blériot, however, they frequently support the entire weight of the machine in flight.

Similarly, the advanced position of the pylon puts the top front wires in a better position to reinforce the wing against the force of direct resistance.

The tandem model tail is larger than that on the single seater, and gives the greater measure of control that is desirable for extraordinary feats of this description, but not necessarily so for everyday flying.

We have, therefore, a perfectly normal aeroplane combined with a perfectly abnormal pilot, and the pilot is abnormal not in performing complicated and rapid movements of the control with the dexterity of a Paderewski, but in having the nerve to sit still in the most trying attitudes while his machine continues properly to carry out the evolution on which he initially caused it to begin.

If Pegoud got flustered and wiggled his control lever in nervous uncertainty, he would end up in a heap on the ground just as surely as any other pilot does in a similar plight. Pegoud is marvellous because he understands precisely what his machine is going to do, and knows precisely how long he desires it to keep on doing the same thing. In a word, Pegoud is the perfect human automaton.

Instead of controlling the machine, Pegoud lets the machine control itself. From the standpoint of the scientific experimenter, he is the ideal pilot, for he has the intelligence to eliminate himself at the moment that the machine enters upon its appointed task. He flies it with the utmost skill to the desired altitude, he turns it head downwards towards the earth, he drops like a stone with it until he has acquired the momentum necessary to effect his purpose, and then he calmly and deliberately pushes forward his elevator lever and sits still while the machine flattens out on its back.

The amazing thing is that the man himself can retain his composure in positions that are actually nauseating to the average person. It will be observed that Pegoud is always on the outside of the circle. Even when he

loops the loop he does so the wrong way round, that is to say he himself is on the outside of the machine, and would be thrown clear of it were it not for his "braces." He is, of course, specially strapped in, and during these manœuvres the weight of his own body is seldom pressing upon the seat of his trousers. To be suspended even from a stationary and secure apparatus in this way would ordinarily be considered extremely uncomfortable, to be expected to take an intelligent interest in one's surroundings while in such a predicament would be asking too much of most people, and to expect a man properly to use the controls of an aeroplane while thus situated would certainly be beyond the possibility of all but a few. But, add to all this that these things are to be carried out on an aeroplane rushing headlong like a shooting star through space, and you have a combination of circumstances that are nothing short of a nightmare, and which certainly none could expect anyone else voluntarily to endure.

However, Pegoud has not only done so but continues to repeat the performance with smiling composure. To say that his *sang froid* after the event is marvellous is a little ridiculous, inasmuch as were he otherwise than calm about it he could neither have the nerve to go through the performance safely nor the pluck to repeat it.

The scientific interest in Pegoud's achievements lies in the fact that they are the most complete full-scale demonstrations of the fundamental principles of flight that have ever been carried out. Every aeroplane worthy of the name is inherently stable within certain limits. By this is meant that when an aeroplane is properly designed, it will naturally support itself on a level keel at a certain speed, and will naturally tend to recover that position if the disposition of its surfaces is not tampered with. The control on a modern aeroplane gives the pilot ample scope for destroying the natural stability inherent in the design of a machine, and many an accident is caused through the abuse of the control, the proper use of which is, of course, fundamentally necessary for the purpose of steering the machine on its appointed course.

There is, also, one other fundamental consideration, which is clearly recognised by all who have anything to do with flying, which is that nothing can avert disaster if there is inadequate headroom for recovery. Before Pegoud attempts any of his manœuvres he ascends several thousand feet above the ground, which gives him plenty of room in which to allow the machine to take its own course in emergency. If he attempted such things at low altitudes, the least deviation from the anticipated path would result in disaster to Pegoud, as to any other pilot.

Because of its peculiar design, an aeroplane tends to follow a path of its own through the air, even when it is not under human control. The reaction of the wind on its wings and on its tail causes the pressure by which the machine is supported to be disposed in such a position relatively to the weight as will keep the machine on a certain course. Even a flat piece of paper is in reality obeying a definite sequence of forces as it flutters to the ground, and the only difference between such motion and flying is that the one zigzags about in all directions, and is, therefore, incapable of purposeful control, whereas the other has a natural continuity of direction and, therefore, is susceptible to human guidance.

Given a properly designed machine, and one that is intact in every detail, and given sufficient headroom in which to fall, the inherent safety of the system never departs from it. That is, in effect, the lesson of Pegoud's flight. Provided that the pilot is properly strapped in his machine, and provided further that he has the nerve to keep cool, even when he is upside down, he can always regain control of his machine, for it continues to remain an aeroplane under all circumstances, even while upside down.

Emphasis may deservedly be placed upon the parenthesis in the above sentence, in which attention is drawn to the fact that the machine remains an aeroplane "even when it is upside down." This is the special and, properly speaking, new point that Pegoud has demonstrated in such a practical manner. The theory of aeroplane design is founded on the above arguments relating to the behaviour of a machine with the wind pressure on the normal side of the wings. Models have frequently demonstrated on a small scale that a system may show signs of stability even when it is inverted, but had the question arisen in debate it would certainly have been a moot point whether an actual inverted aeroplane would remain controllable for a sufficient length of time to justify the contention of all-round stability. To the best of our knowledge, no one has ever thought it of sufficient consequence seriously to raise the point as a theoretical problem, yet already Pegoud has come forward with the practical answer.

Some who witness Pegoud's achievements may be inclined, as a consequence of the temporary failure of their hearts to beat properly at the critical moment, to condemn such feats as altogether unnecessarily daring. We suggest for their consideration, however, the thought of how others have to go up towards the sky on wings, and that anything making for greater confidence of those who have to do this work must, in the long run, also make for their good. We quite realise the danger of inexperienced pilots being tempted to carelessness by such exhibitions, but that is a risk we have ever with us.

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Pegoud's Remarkable Tests.

MR. E. L. M. LEVESON-GOWER, writing from Buc, sends us the following very interesting account of Pegoud's performances on the Blériot :—

"Pegoud (by the time you receive this, the news will probably be common property in England), has just surpassed himself. It was known that at 11 a.m. to-day he would try to 'loop the loop' sideways, but no one was prepared for the stunts he treated us to. A small crowd of some 500 people had gathered at the aerodrome by 10, but a wind of 30 m.p.h. was blowing, and most of us were well prepared to be disappointed. But Pegoud turned up soon after, all smiles, nothing on earth can frighten him. Then the machine was brought out, and while M. Blériot anxiously examined every wire, Pegoud occupied himself by explaining to the many photographers the exact spot in the sky where he would make the attempt. Then he mounted, and was strapped in, M. Blériot himself started the engine, and Pegoud, with a wave of his hand to the crowd, got away. High up he climbed, 1, 2, 3,000 ft. Then the machine banked, banked, banked——and side-slipped. He tried again and again, four times, but he could not do it. He came down, he had failed. But soon he was up again, only to fail again, it seemed impossible to get the machine beyond the vertical. But Pegoud is not the man to be beaten. We realised that he would die rather than fail. Once more he tried and for a second, which seemed an hour, the left wing pointed to the earth and the right wing to the heavens, and—at last. And with what can best be described as a wriggle the machine recovered its normal position. He had done it. What a shout went up!! But he was not satisfied. Almost at once he was climbing, and then—— he had looped the loop. Still, this new master of the air was not satisfied. He did his old stunt. A dive, then on to his back, then another dive to recover.

"Before he had landed, the crowd rushed madly to meet him, and a shout of "Vive Pegoud" went up which must have been heard in Paris.

"What a man!! And to some present he was almost a God. The scenes after his landing are best left to your imagination."

FLIGHT

ARMCHAIR REFLECTIONS.

By THE DREAMER.

The Aerial Derby.

WELL, what did you think of it? Being a reader of FLIGHT, you are naturally interested in aviation, and therefore would not miss seeing such an event as The Aerial Derby, unless you happen to be situated in one of those little places not marked on the map, and known to no man except the canvasser at election times, or one of the satellites of Mr. "ninepence-for-fourpence"; they'd find you if you resided on top of the North Pole. I hope if you did see it, you went to the aerodrome and paid up like a man; it was well worth paying to see, and one feels so much more pleased with one's self when knowing that what has been seen was paid for, and seen as one's just right. I have no doubt that many thousands went to Epsom or Epping and saw it for nothing, but they did not see the real thing. Epsom is all very well when you don't feel well, and Epping, so I have heard tell, is a nice place to go "gathering nuts in May," but as I happen to feel in good trim just know, and as I have never gone gathering nuts in May, I went to Hendon, and a real good time I had. I don't know whether I am what might be called a glutton in the matter of aviation. Certainly I never tire of watching it, but the amount that was placed before me on Saturday was enough to satisfy even me.

From early in the day, right up to the time of the race, and after, the air was full of machines. I do not think that there was a single moment during the whole day when the cambered plane was not "deflecting, or sweeping downwards a stratum of air in order that it may derive support for itself and the machine by the upward reaction to the downward force," as the text-book tells us. I believe it goes on to explain that "this is applied to bring about the acceleration of the air mass," but just about this time I began to lose support through the reaction of the downward force, owing to being filled with nothing more substantial than a seeming stratum of air, and as the convex of my camber appeared to be taking a more concave shape than was pleasing, and as the new pavilion was so near—in plain language, I went and had lunch.

If ever the officials at the aerodrome put themselves to it to keep "the ball rolling," they did it on Saturday, and I congratulate them on the result. The Aerial Derby itself was splendid. Machines may have improved to some extent since last year, and engines are perhaps more reliable, but I think the great difference is in the pilots themselves. We have now dozens of pilots who, owing to their constant flying, have gathered experience fully fitting them to make long cross-country flights with the certainty and reliability of express trains. I remember last year, when I saw them start, I was wondering how many I should see come back and enter the aerodrome from the right direction. This year I had no doubts about it, and I was not disappointed; they came back, not only from the right direction, but practically flying over the same tree. There was no looking round all one side of the aerodrome, watching for their approach; they came in one after the other, direct to the finish, straight as a line, landing as fast as previous machines could be pulled out of the way to make room for them. Hamel on the racing Morane was last to leave and first to return, which I had expected, but I certainly thought he would have made faster time; perhaps he made quite sure he went round outside the controls, and so covered a little extra ground. Barnwell on the Martinsyde flew a grand race, and handled his machine as though he had flown no other. It is a beautiful machine, and deserves to bring a little better luck to its producers than its predecessors. I had thought it might perhaps have been faster, but it is by no means what one could call a light machine, and perhaps the engine did not give quite the power it is capable of; new machines are never quite at their best, but it put up a really creditable performance, and Hamel had not much to give away beyond the one minute in the starting time, seeing that the two machines came in so close, that in the distance no one could tell for certain which was leading. The Avro and the Sopwith did splendidly also. There is a lot of difference between a Morane with a twenty foot span and the Sopwith capable of carrying three passengers. Even the Avro, light as it is for a biplane, is still a biplane, yet it followed in good time, and must have a fair turn of speed. This Avro, by-the-bye, is fair to look upon. I have by me a picture of an Avro triplane flying at Lea Marshes only two or three years ago, and I could not help comparing the two machines. This reminds me that Mr. A. V. Roe was the first man to fly in England, and, strangely enough, the first aeroplane I ever saw either on the ground or off it, was this same "Bullseye." I was on the top of a tram in Lea Bridge Road, and saw him make a hop of about fifty yards. I was so interested that I got down and inspected this thing of wood and paper; for paper it really was—a sort of yellow waterproof packing paper lined with a very rough open canvas net. Parcels coming from the continent are now packed in the same stuff; you have no doubt seen it. I remember this machine was principally composed of holes and tears. Every wing had great rents in it, and the covering of the *fuselage* was hanging in ribbons. The engine was, I believe, a 9 h.p. Jap., and the propeller—oh! that propeller; it looked like a pair of extra-sized wooden spades from the seaside; or was it four? I forget now. The engine no doubt had been good—as a motor-bike engine—and it did its best. No doubt the whole contraption did not weigh much; the heaviest part probably being Mr. Roe's hair, which in those days he did not seem to have time to get cut, and which I remember used to wave behind in the breeze something after the manner of Nardini's scarf. I should like to be able to stand this old triplane by the side of the latest production of the Avro firm; it would be instructive of the progress of the art of aviation. I am afraid I am wandering somewhat from the Aerial Derby, but I delight in these thoughts.

A sad finish to what had been a splendid day was the accident to Sydney Pickles and Mrs. Stocks. My sympathy goes out to Pickles in that this shadow should have fallen across what had hitherto been a brilliant career.

My sympathy goes out to Mrs. Stocks, a clever pilot and a gentle little lady whom everybody loves; I am sure she has the best wishes of everybody who knows her, for a speedy recovery. I sympathise with Mr. Lawford in the loss of a valuable machine, which he can ill afford at this juncture, and I ask him to keep a good heart; it's a long lane that has no turning.

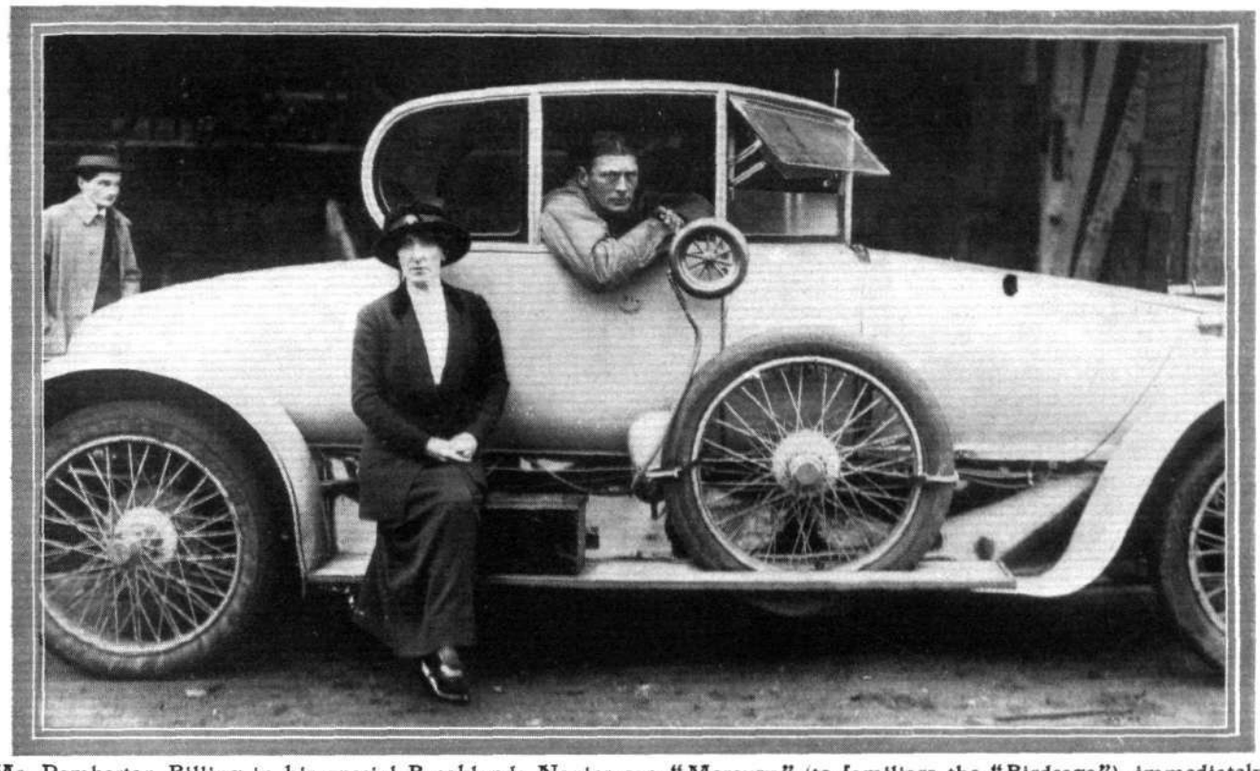
I am sorry for the London Aerodrome Company that their record for safety in passenger carrying, of which they had every reason to be proud, should have been broken, especially as it was not either their machine or pilot.

MR. PEMBERTON BILLING WINS A WAGER.

LAST week, as most people know, Mr. Pemberton Billing made a most remarkable demonstration of how it is possible to learn to fly and secure a pilot's certificate within the space of a few hours. Subsequent to the feat we saw Mr. Pemberton Billing, whose account of his experiences was as follows :—

"The flight was the outcome of a wager made at Hendon when Handley Page stated that on his automatically stable machine anyone could learn to fly in a very short time—twenty-four hours, to use his own expression. I stated, in reply, I did not believe in automatic stability, but I did believe in the skilful handling of a machine, and that any man who had enough sense to come in out of the wet could learn to fly a known flying machine in one summer's day. The result was that I made a wager with Mr. Page that he, as the inventor and constructor of his own machine, could not learn to fly it in the time he stated, and I made another wager that I would take any aeroplane that he could secure and would not only learn to fly but obtain the Royal Aero Club's certificate within twenty-four hours of sitting on the machine, the terms of the wager being £500. This attempt was to start at dawn on Wednesday morning, and the ticket was to be completed before dawn on Thursday morning. As I found it impossible to hire a machine for the purpose, I had to buy a machine eventually, to be able to carry out the conditions. At a quarter to six on Wednesday morning, in drizzling weather, I started at Brooklands on the Henry Farman biplane which I had acquired, which is a fac-simile of the one that Paulhan flew to Manchester. Mr. Page was to make his try at Hendon. Mr. Barnwell, chief pilot of the Vickers school, volunteered to come up as passenger and verbally instruct me, I taking the pilot's seat and controls. After four minutes taxying Mr. Barnwell gave the sign to shove her up in the air. I did so, and we attained a height of 200 ft. flying steadily. Mr. Barnwell accompanied me for about 20 to 25 mins. in the passenger seat, during which time I succeeded in doing some dozen circuits of the aerodrome. Several figure eights, two or three *vol planés*, landings, and some landing under power were carried out, and as it was raining and the machine was sodden and sluggish in consequence of carrying two 13-stone men, this made the landing rather speedy and much more difficult in consequence. At the end of 25 mins. Mr. Barnwell left me, and told me to get up and get on with it. I immediately started away without any taxying, rose straight in the air at an exceedingly dangerous angle, amid the yells and shrieks of the spectators. I did a half circle and landed successfully, got up again immediately and did a circle and landed successfully, and then rose again and did five circuits. It was my intention to do twelve, but the petrol running out brought me down, the idea of coming trouble dawning upon me by the missing of the engine and the frantic waving of petrol cans by agitated spectators below. The rain had then set in so heavily that I was obliged to put the machine away for half an hour, at the termination of which time the machine was brought out again, and Mr. Barnwell went once again as passenger for three or four minutes to test my right-hand turns before allowing me to essay the figure eight alone. Immediately on descending, Mr. Barnwell jumped out of the machine, and I took her up at once, doing three successful eights. During the right-hand turns of these I managed to execute the most alarming banks, and, from inexperience, startled by the angle at first hung on to the struts. When I had descended from this stunt, on Mr. Barnwell's orders I proceeded to practise *vol planing* from an altitude of about 100 ft., with the engine cut off, which experience I found about the most arduous of all. While I was performing my gyrations in the air Mr. Barnwell thought it about time to send for Mr. Rance, the Royal Aero Club official observer. There was some delay in finding him, as the weather, which was puffy and wet, never led him to believe anyone would want his services on such a morning. Eventually he was found, and kindly consented to observe, notwithstanding the short notice given. Incidentally this entailed a loss of an hour or more in the time in which it would have been possible for me to have taken my ticket, because it stands to reason that if I was capable of doing the test at a quarter past nine I was quite as capable of doing it at a quarter to eight, so I was practically waiting during that time to go through the regulation tests. Although Mr. Rance expressed himself as exceedingly dubious about the advisability of attempting, he consented to act in his official capacity. I then rose in a very steep climb to a height of about 250 ft., so as to make sure of the altitude test once and for all. Then I came round with a left-hand bend, and proceeded on my first five figure eights. The five, so I was told afterwards, were good sound flying of an experienced airman, although the fifth right-hand turn proved an alarming one. I was flying over the paddock, where my wife was watching very

Mr. Pemberton Billing, in the pilot's seat, receiving instructions from his tutor and passenger, Mr. Barnwell.



Mr. Pemberton Billing in his special Brooklands Napier car, "Mercury" (to familiars the "Birdcage"), immediately after he had finished his *brevet* tests. Seated on Mr. Billing's "runabout" is Mrs. Pemberton Billing.

anxiously, and to give her confidence I waved my hand to her, taking my attention off the elevating plane for the moment. The machine, as machines will on right-hand turns, shot up, throwing me back on my seat. The position was rendered more hopeless, undoubtedly, by my grabbing hold of the 'joy stick' to recover myself, which caused her to stand on her tail. She stopped dead in the air, about 200 ft. up, and then fell about 100 ft. tail first. From the looseness of the control, caused by the machine being stationary, I jumped to the conclusion that the wires were broken, and tried to save the position by throwing all my weight forward, with the result that when about 50 ft. from the ground the machine righted itself and dived head first. This, of course, was not attributable so much to my throwing my weight forward as to the fact that with me also came the joy stick, bringing the elevator down and causing the machine to dive, which immediately tightened up the controls. I instantly realised that I had the control of the machine again, and, thinking I would be disqualified for this stunt, saved her from landing about 20 ft. from the ground, climbed up again to 160 ft. and did an extra figure eight to make sure. Then followed a *vol plané* landing, and after listening with some impatience to Mr. Barnwell's illuminating and very forcible remarks on right-hand turns, I started off for the last half of the test, which was accomplished most successfully, finishing off with a *vol plané* from 100 ft. with the engine cut off, and brought the machine to rest without switching on again, with the elevating plane over the heads of the observers, thus succeeding in obtaining my pilot's certificate before breakfast on the morning when I had for the first time in my life sat in a flying machine that flew."

Of course, it will be remembered by all those who were in aviation in its pioneer days that Mr. P. B. built three machines of his own, and the last attempt he made, when he smashed the machine up, is a matter of record. He dug the engine out of the ground, and did his right arm and leg a lot of good at the time. Afterwards the tracks of the wheels of the machine were examined with a magnifying glass, and it was found that 60 ft. immediately preceding the smash there were no wheel marks in the ground, which we believe constitutes a record for being the first all-British machine to get off the ground.

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A Speed Record by "Astra-Torres."

DURING some speed trials at Farnborough on Friday of last week, the naval "Astra-Torres" airship, going with and against a 12-mile wind attained a mean speed of 51·1 miles an hour, which, it is claimed, is a world's record. Among the officers on board were Capt. Masterman and Lieut. Usborne.

The "Eta" Completes her Trials.

LAST Saturday night saw the new Army airship completing her trials so satisfactorily that she was handed over at once to the R.F.C. in order to take part in the manœuvres this week. Cruising with and against a 14 mile wind, a mean speed of 42 m.p.h. was maintained, while during the return trip from Basingstoke, Capt. C. M. Waterlow took the airship up to a height of 4,200 ft.

Twelve-Hour Voyage by "L2."

THE new German naval Zeppelin "L2" was taken over by the Government on Saturday on the successful conclusion of its 12-hour trip from Friedrichshafen to Johannisthal. With 23 persons on board, Capt. Gland being in command, the Zeppelin works were left at 4.20 a.m., and passing by Nuremberg at 8.55 a.m. and Leipzig at 1 o'clock, Johannisthal was reached at eight minutes past four in the afternoon, a distance of about 700 kiloms. having been covered in the 12 hours.

Fleurus Out for 4½ Hours.

ON Saturday, the French military dirigible started from Paris at 4 a.m. with the object of going to Bordeaux to meet the President, but on account of the rain and wind it was deemed advisable to return home after reaching Mont-de-Marsan, and the airship was safely docked at 8.30 a.m.

Airship Afternoon Tea Parties.

DR. ERNST FEIST WOLHEIM, a rich German, gave a novel tea party on Sunday last on the Zeppelin "Sachsen," which he had specially chartered for the occasion, during a cruise of an hour and three quarters' duration from Potsdam. The party included 12 ladies and 8 gentlemen, and tea was served while over the Unter den Linden.

New French Military Airship.

ON Monday trials were carried out with the Astra airship "Eclaireur Conte" which has been slightly altered since she was originally designed to comply with the requirements of the French military authorities. With M. Henri Capferer in charge she cruised from Issy, to just by Ecquevilly and back in an hour and twenty-five minutes. In the afternoon, M. Deutsch de la Merthe, President of the French Aero Club, was taken with some friends from Issy to his house at Romainville, from which point the airship returned with a following wind in half-an-hour.

A Long Cruise by French Military Airship.

A REMARKABLY fine cruise was made by the Astra dirigible "Adjudant Vincenot" on Tuesday, when she went from Albi to Issy, a distance of 688 kiloms. (430 miles) the time taken being 10¼ hours. The airship is fitted with Chauviere propellers.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

Tuesday last week Mr. Sydney Pickles, accompanied by Capt. Courtney, R.M.L.I., as observer, put a new Short biplane, fitted with 80 h.p. Gnome engine, through the Admiralty acceptance tests in remarkably fine style. He climbed to a height of 9,500 ft., and made a spiral descent with engine shut off, finishing up with a splendid landing. Both pilot and passenger seemed to have felt acutely the extreme cold. There is no doubt that Mr. Pickles is a very fine pilot, entitled to rank among the best. He has very quickly mastered the Shorts, and on these fine machines he gives exhibitions of his best. The news of his sad accident on the Champel came as a great shock to those at Eastchurch who, during his short residence there, have come into direct contact with him, and though he will have the sympathy of the whole aviation world, and their fervent wishes for a speedy recovery, none will be more sincere than those at the little flight colony at Eastchurch, whilst all our best wishes that Mrs. Stocks may soon recover and be about again.

On Wednesday Engineer-Lieut. Briggs on a Blériot, Lieut. Davis on a Sopwith, and Paymaster Parker on a Short, left for Rugby to take part in the Army manœuvres, each pilot taking an E.R.A. as mechanic.

Professor Huntingdon has been doing some flying lately, and on Monday last he brought out his machine and made several circuits of the aerodrome. On Sunday he made quite a nice flight in the afternoon with a good landing.

Mr. Maurice Wright and some of his friends having constructed a Wright-type glider, during the past week they have been making very successful glides from Stamford Hill (at the rear of the aerodrome) and on Sunday the first free glide was attempted, with eminently satisfactory results. Both Messrs. Wright and Wanklyn made free glides, keeping the glider well under control. The glider itself is a nicely constructed biplane of 32 ft. span and 5 ft. chord, and the whole thing including controls, &c., weighs only 95 lb. The controls are very good, a movement to and fro of the lever actuating the elevator, a sideway motion for the warp, and a wheel mounted on top of the lever works the rudders.

Commander Samson made several flights on Friday night with passengers, going over Sheerness and Minster at good heights.

On Saturday afternoon the Kent Automobile Club visited the aerodrome and were welcomed by Mr. Harold Perrin. For quite an hour a constant stream of motor cars, from the large touring class down to the cyclecar, of all makes, colours and ages, passed through the village en route for the aerodrome. Luncheon was partaken of by some 120 members in a hangar placed at their disposal by Mr. McClean. This very necessary item over "joy rides" were the next important consideration and Mr. McClean and Commander Samson were kept busy taking up members of the fair sex as well as mere man, sometimes at the rate of two per trip.

Brooklands Aerodrome.

On Thursday, Friday, and Saturday, this week, Monsieur Pegoud, as arranged, was to give demonstrations of flying at Brooklands between 3.30 p.m. and 6 p.m. (weather permitting), including flying in an inverted position.

A wonderful feat was accomplished by a Mr. Pemberton Billing, who, in the short space of a little over four hours learnt to fly on a Henry Farman biplane which he had purchased, and passed his *brevet* tests. Mr. Pemberton Billing was fortunate in securing the services of Mr. Barnwell, the well-known head pilot of the Vickers school, as instructor. This is referred to elsewhere in this issue.

On Thursday the Brooklands competitors for the Aerial Derby were busy testing their machines. Mr. Barnwell made some fine flights on the Martinsyde monoplane, and Mr. Raynham on the new Avro biplane (delivered the previous day) which developed a rare turn of speed and wonderful climbing capabilities. Three or four Vickers and a couple of Bristol machines were busy with pupils.

On Saturday Messrs. Barnwell (Martinsyde), Raynham (Avro), and Hawker (Sopwith) flew to Hendon in readiness to compete in the Aerial Derby, in which they gave an excellent account of themselves, Mr. Barnwell being second in scratch race and handicap, Mr. Hawker third in scratch race and fourth in handicap, and Mr. Raynham fourth in scratch and fifth in handicap. On the way to Hendon Mr. Raynham took Mr. Lane as passenger, the latter having charge of Mr. Raynham's little terrier "Zep." Mr. Sydney Pickles flew to Hendon on the Champel biplane with Mr. Lawford as a passenger, where later he had the misfortune to meet with a bad accident when carrying Mrs. Beauvoir Stocks, the well-known lady aviator, as a passenger. During the progress of the Aerial Derby, Mr. Orr Paterson flew to Esher on the Vickers Blériot, where, at an altitude of 3,000 ft., he had a fine view of the competitors. Mr. Barnwell flew back from Hendon on the Martinsyde monoplane in 15 mins., and was followed by Mr. Hawker on the Sopwith biplane.

Delightful weather conditions obtained on Sunday and a large number of people attended, the free passenger flight being won by Mr. J. Allen, of Barrow Hills, Long Cross, Chertsey, who was taken up by Mr. Raynham on the new 80 h.p. Avro biplane, on which machine Mr. Raynham had returned from Hendon with Mr. Lane. Mr. Hamel flew over from Hendon in 11 mins.—a record flight—on his new racing Morane-Saulnier monoplane (80 h.p. Gnome), the machine on which he had won the Aerial Derby the previous day. Mr. Barnwell was out on three different machines—Vickers-Blériot, No. 5 monoplane and 70 h.p. biplane—on which he gave fine exhibition flights, as did Mr. Raynham on the Avro, Mr. Hawker on the Sopwith and Mr. Merriam on the Bristol, the latter giving one of his now famous spiral descents. Mr. Orr Paterson also made some flights on the Vickers-Blériot and Mr. Newton-Clare and Mr. Elsdon (pupils) on the No. 5 Vickers monoplane.

To-morrow (Sunday) a cross-country speed handicap confined to Vickers machines will be decided, and 6 machines, 3 monoplanes and 3 biplanes will compete, and be piloted by the three instructors and 3 of their pupils. This will be the first occasion in the history of aviation on which a race has been held with entrants emanating from one school, and it speaks well for the thoroughness of the Vickers School's equipment when it is stated that in all 8 machines are available for purposes of instruction.

Mr. Harry Webb, one of the latest pilots to secure their *brevet* at the Vickers Flying School, Brooklands.

Bristol School.—Merriam testing on Monday, last week, then with Lieut. Warren and Mr. Boger. Mr. Alford a solo alone. Wind put an end to morning's work. In the evening, Merriam for a solo, then with Lieuts. Hinds and Warren, and Mr. Boger on straights. Mr. Alford for a solo. Darkness prevented further flying.

Tuesday, too foggy in the morning for flying. Raining all the rest of the day.

Merriam for a test on Wednesday, then up with Lieut. Warren, Mr. Boger and Capt. Henderson—a new pupil—Mr. Alford a solo, practising landing near a mark. Merriam up with Mr. Boger and Lieut. Warren. In the afternoon Merriam first out taking Capt. Henderson as passenger, reaching a height of 1,500 ft., with a spiral descent. Afterwards up with Lieut. Hinds twice, Lieut. Warren and Mr. Boger once, and again with Capt. Henderson. Darkness prevented further flying.

Very foggy first thing on Thursday. About 11 o'clock Merriam test, then with Lieut. Warren on several straights, afterwards taking Capt. Henderson on circuits. In the evening Skene testing with Capt. Henderson as passenger, afterwards giving pupils tuition. Merriam up with Lieuts. Hinds and Warren, and Mr. Boger. Mr. Alford a short trip alone as it was getting dark.

On Friday, foggy early. Merriam tested about 8 a.m., afterwards with Mr. Boger, Capt. Henderson and Lieut. Warren on straights and circuits. Afterwards giving Mr. Boger and Lieut. Warren more straights and landings, these pupils went alone for first time, doing good straights and landings. Merriam with Captain Henderson. Skene test in the afternoon, then with Lieut. Ames on circuits, and also with Lieut. Hinds, and later with Lieut. Ames again. Lieut. Warren doing straights.

Too windy on Saturday morning for flying. Merriam tested in the evening, and then up with Lieut. Warren showing pupil right-hand turns, this pupil for three turns doing straights, circuits, and right-hand turns very well. Darkness prevented further flying.

Vickers School.—Monday morning, last week, Knight test biplane 20, then Mr. Addis solo circuits. Messrs. Barnwell, Paterson, Knight, on Blériot mono. Knight test No. 5 mono. Mr. Elsdon solo, Barnwell solo. Barnwell on biplane 20 with passengers. In evening, Paterson on biplane 20. Mr. Addis solo circuits.

In morning, Wednesday, Knight on biplane 20, then Mr. Addis solo. In afternoon, Barnwell on biplane 21, with passengers. Mr. Addis then went for his *brevet*, getting through in excellent style. Barnwell testing new biplane, No. 26, with Vickers-Radial engine. Knight with Mr. Howell on biplane 20, then Mr. Howell solo straights.

Paterson, Thursday evening, test No. 3 mono., Mr. Webb and Mr. Morgan straights. Paterson test biplane 20, then with Mr. Sherlock. This pupil then solo straights. Barnwell on biplane 21 with passengers. Barnwell test No. 5 mono., Mr. Newton-Clare solo circuits.

Friday evening, Barnwell testing No. 7 mono. Paterson test No. 3 mono., Mr. Webb and Mr. Morgan straights. Paterson test biplane 20, Mr. Howell and Mr. Sherlock solos, straights.

Saturday afternoon, Mr. Orr Paterson on Blériot monoplane.

Barnwell and Paterson on Blériot mono., Sunday afternoon. Barnwell and Messrs. Newton-Clare and Elsdon on No. 5 mono. Barnwell on biplane No. 21 with passengers.

Eastbourne Aerodrome.

On Thursday, last week, Lieut. Lambert Playfair obtained his *brevet*, flying well. He was followed on Saturday by Mr. Fred Bevis, who successfully accomplished the second half of his test, and so gained his ticket. On Tuesday and Wednesday, Gassler was

Lieut. Neville Morris Jenkins, R.A., who showed excellent form when taking his certificate at the Bristol School on Salisbury Plain recently.

out with Mr. Thornley, and Fowler was out with Mr. Wood. On Thursday, Gassler took Mr. Thornley for a stunt along Eastbourne Front, flying at an altitude of about 2,000 ft. and returning with a fine *vol plané*. Friday, Mr. Thornley had five or six short circuits for landing practice, and Gassler was out giving exhibitions of banking and *vol planing*.

On Saturday, after Gassler had tested the E.A.C. biplane he took up Mr. Thornley, and Fowler took Mr. Wood.

Monday, Gassler had Mr. Thornley out for landings. Fowler has been busy all the week with the Henry Farman waterplane, passenger carrying.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Messrs. Cripps, Kidd, Strange and Carpenter out at 7 a.m., Monday, last week, doing straights with Mr. Birchenough. In evening Messrs. Carpenter and Strange doing straights with Mr. Manton in passenger seat.

A fine morning, Wednesday, gave all pupils an opportunity of putting in some good work. Starting at 6 a.m. the following pupils

Mr. John W. W. Slack, who passed his *brevet* recently in fine style at the Hendon Aerodrome on the 50 h.p. Gyro Wright biplane under the tuition of Mr. Beattie. Mr. Slack is brother of Mr. Robert Slack, who has made such a fine name for himself amongst British pilots.

continued practising at short intervals throughout the whole of the day. Messrs. Cripps, Clarke, Kidd, Draper, Hart Davies, Strange, Blake and Carpenter in the early morning, under Mr. Birchenough, all doing straights with instructor. Mr. Strange afterwards doing solo straights. At 10 o'clock Mr. Noel took command, the pupils still continuing work. At 11.15 Mr. J. Lillywhite, a new pupil, out rolling with Mr. Birchenough and subsequently with Mr. Manton. At 3.15 Mr. Blake doing solo circuits, also Mr. Strange, and Mr. North out doing straights at 6 o'clock.

Foggy Thursday morning. Mr. Cripps out at 6.15 a.m. doing straights, with Mr. Birchenough in passenger seat. Messrs. Strange and Blake doing circuits, Messrs. Draper, Kidd, North, Clarke and Carpenter all doing straights with instructor, followed by Mr. Davies doing straights and circuits alone. Sir Bryan Leighton out at 11.20. In the evening pupils out under the instruction of Mr. Manton, Mr. Strange showing good progress and doing steady circuits. Mr. Blake also doing solo circuits.

Blériot School.—Monday, last week, Messrs. Gold and Dunn, two new pupils, joined the school, and took their first lesson on the Penguin in promising style. In the afternoon, Lieut. Vernon, another new pupil, started practice on a monoplane; Lieut. Vernon has already obtained his ticket on a biplane. In the evening, Messrs. Gold and Dunn and Lieut. Vernon out on the Penguin. Mr. Leeche good progress on L.B. 2.

Messrs. Gold and Dunn further practice on Penguin Tuesday morning, later on the rain stopped all work.

Wednesday, Desoutter trial on L.B. 4, afterwards Capt. Cox circuit on same machine; Capt. Cox is only waiting for a favourable opportunity to pass for his ticket. Messrs. Williams, Leeche and De Villiers splendid straights on L.B. 2. Messrs. Gold and Dunn on Penguin. Instructor Teulade 20 minutes on the "50," reaching an altitude of 2,500 ft. In the evening Desoutter 10 minutes on the "35," afterwards giving same over to Capt. Cox for circuits. Messrs. De Villiers, Leeche and Williams straights on L.B. 2. Messrs. Dunn and Gold rolling practice on Penguin. Mr. Teulade 10 minutes on "50."

Desoutter trial flight, Thursday, on L.B. 4. Capt. Cox circuits on same machine. Messrs. Gold and Dunn again rolling on

Penguin, both are making rapid progress. Messrs. De Villiers and Leeche on L.B. 2 for straights. In the evening, Capt. Cox again on L.B. 4. Messrs. Leeche and De Villiers, very good straights on L.B. 2. Messrs. Gold and Dunn excellent straights on Penguin. They will soon be ready for promotion on L.B. 2.

Friday morning, Mr. Dunn on the Penguin. Messrs. Leeche, Williams and De Villiers on L.B. 2. Mr. Teulade for 15 minutes on the "50."

Wind and rain Saturday prevented further school work.

W. H. Ewen School.—On Monday, last week, the school was out at 6.30 a.m. under the instruction of Mr. F. Goodden. After test flight on 35 h.p. Caudron No. 3, he handed machine to Lieut. Holbrow, who was doing straights, and Mr. Scott, who was rolling. At 5.30 p.m. Mr. F. Goodden made a flight on 35 h.p. Caudron No. 1. Mr. Watts went through the first part of his *brevet* tests in good style. Lieut. Bewes made a flight on same machine, and Mr. Warren was out on 35 h.p. Caudron No. 3.

The pupils were out at 6.30 a.m. on Tuesday, when Mr. Goodden made test flight on 35 h.p. Caudron No. 1. Lieut. Bewes made a flight on same machine, and Mr. Watts circuits.

School out 6 a.m. on Wednesday. M. Baumann made a test flight on 35 h.p. Caudron No. 2. On Caudron No. 1 Messrs. Scott and Carruthers rolling, Mr. MacGregor hopping and making short flights, Mr. C. George straights and half circuits, and Lieut. Holbrow straights. M. Baumann made two flights on 60 h.p. Caudron to Harrow and back. Mr. Goodden, flight on No. 1. Mr. Watts, figures of eight on same machine, then went through second half of *brevet* tests, flying well and landing on the mark. Messrs. Goodden, Warren and Bayetto, flights on Caudron No. 2. On No. 1, Lieut. Holbrow straight flights, Mr. C. George half circuits, Messrs. Carruthers and Scott rolling.

Thursday morning the pupils were out at 6.20. M. Baumann made a test flight on *brevet* machine, and then handed it to Mr. C. George, who was doing half circuits. On No. 1, Mr. F. Goodden was instructing Messrs. Scott and Carruthers, who were rolling. Mr. Goodden also made test flight on No. 3. During afternoon, M. Baumann testing 60 h.p. Caudron. Mr. F. Goodden on No. 3. On *brevet* machine, Mr. C. George doing half circuits. On No. 1, Messrs. Carruthers and Scott rolling.

On Friday, the pupils were out at 9.30 a.m. M. Baumann test flight on *brevet* machine. On Caudron No. 1, Messrs. Scott and Carruthers rolling. Lieut. H. M. Fraser, a new pupil, received first instruction. During afternoon, Mr. F. Goodden made a flight on No. 2. On No. 1, Mr. Goodden with Lieut. Holbrow doing straights, Messrs. Scott and Carruthers rolling.

Salisbury Plain.

Bristol School.—Rather bumpy, with rain, on Monday last week at times. Jullerot made a trial on the school biplane, and Capt. Ferguson followed with a good solo. Tuition on biplane by Jullerot to Assistant-Paymaster Coles and Lieut. Cooper. In the evening the weather was too bad for tuition. Weather still too bad for flying on Tuesday morning. In the evening Jullerot for a trial on a school biplane, then tuition to Lieut. Gallaher and Assistant-Paymaster Coles. Herr Voight a good solo on a biplane, and Sippe a solo on a tractor biplane, afterwards giving a passenger trip to Lieut. Gallaher.

On Thursday Jullerot for a trial on a school biplane, and on a tandem monoplane, afterwards taking for biplane tuition Lieut. Gallaher. Sippe on tractor biplane to Netheravon for observers for Capt. Ferguson, returning with Lieut. Bowers. Capt. Ferguson completed half of his ticket, and Mr. Voight did an excellent solo. Darkness prevented further flying.

Jullerot for two trials on Wednesday, then Herr Voight for two solos on a biplane. Capt. Ferguson also a good solo. Sippe on a tractor biplane with a passenger. Later Jullerot for a trial found weather too bad for tuition. No flying in the evening, weather too bad.

Too foggy for flying on Friday morning. Jullerot gave biplane tuition to Lieut. Bromet and Lieut. Gallaher but rain prevented further flying. On Saturday Jullerot a trial flight on biplane, then tuition to Assistant-Paymaster Coles and Lieut. Bromet. Sippe on tractor biplane with Lieut. Bromet to 1,000 ft., and afterwards with Lieut. Ferguson to 200 ft.

Shoreham Aerodrome.

Nothing extraordinary has taken place here during the past week, although an amount of general flying has been done by Mr. Cecil Pashley on his H. Farman machine. Many passengers have been up, including a number of ladies. Mr. B. H. England and Mr. Elliott are progressing very well with their machines, and ere long they hope to have ready a good passenger-carrying 'bus. The Radley-England biplane has undergone slight alterations, and by the time these lines appear, this 'bus will have been tested again. Mr. Gordon England's land machine, the particulars of which are being kept quiet for the present, is nearing completion and will be tried very shortly. Two more hangars have been taken over, and will soon be occupied by some German constructors.

THE WING-BENDING PHOTOGRAPH.

By THE MAN WHO TOOK IT.

THERE are three things to be taken into account when trying to come to a decision as to whether the wing spars of the 60 h.p. "Dep." are bending or not:—Lens distortion, shutter distortion and the real bending. My own opinion is, that the spars are bending, and I have come to that decision by eliminating the other two factors.

It is well known that a cheap lens, one that is not rectilinear, will distort that portion of the picture falling near the margin of the plate, owing to the curvature of the glass forming the lens, but even with the cheapest of cheap lenses, any line from left to right, or from top to bottom, crossing the centre of the plate, will be straight. This distortion is of two kinds, and is known as "pincushion," and "barrel" distortion. If we mark out with black ink on a white card a diagram rectangular in form and with lines crossing the centre from left to right, and from top to bottom, and then photograph it to such size that it fills the plate to within, say, half an inch of the edge all round, and "pincushion" distortion be present, the four outside lines will curve inwards and form a diagram shaped like a pincushion. If "barrel" distortion be present they will curve outwards and form a shape something after the form of a barrel, but in both cases the crossing lines will be straight because they cross the axis of the lens. The distortion commences immediately the line fails to pass through the centre of the lens, but even with the cheapest lenses it is so slight as to be negligible until approaching the edge. A glance at the meridians on a map of the world will perhaps explain more clearly what I mean. A lens of the quality of a Goerz is corrected for this distortion, and this coupled with the fact that the line of the leading edge of the wings of the monoplane passes as nearly as possible through the axis of the lens, does away with the theory of lens distortion. Distortion due to photographing an object moving rapidly across the lens and at right angles to it is of quite a different sort.

A focal-plane shutter has a small slit passing in front of the plate, exposing it to the action of the light, a small portion at a time.

Exposure commences at the bottom, or ground, and finishes at the top or sky. If a motor car travelling at great speed, and with an upright pole in it, were taken with a focal-plane shutter, and with the camera stationary, it is conceivable, the exposure commencing at the bottom and finishing at the top, exposing the pole a bit at a time whilst it is moving rapidly forward, that the top and bottom of the pole would not lay in the same plane, the top being perhaps half an inch forward of the bottom. The pole would then be represented as slanting forward, but the line would be straight and not curved. If the camera be swung on a pivot, or skilfully used by the photographer so that it be moved round at exactly the same speed as the car, this slanting of the pole will not take place, because the car does not then move forward in relation to the plate, but is to all intents and purposes travelling in a circle of which the lens is the axis. That the camera was swung at the right speed in taking the photograph under notice is proved by the fact that small details on the engine are quite sharp, therefore an upright pole, had it been carried, would not have been shown as leaning forward. In any case the only effect of the focal-plane action on the wings would have been to have made them slant.

The oval appearance of the wheels of a car travelling at great speed is due, not only to the fact that such a shutter was employed, but also to the fact that the top of the wheel is travelling at twice the speed of the car, whilst the bottom is not moving at all during the moment of exposure, so that even were the camera swung at a speed equal to that of the car, the wheels would still appear oval.

Were the appearance of wings bending due to the dihedral, the wings, although sloping backward from root to tip, would still make a straight line along each entering edge, and not be curved. The 100 h.p. "Dep." has much more dihedral than the "sixty," yet the wings do not appear to be bending. I think the spars of the "sixty" are bending, because they are curved in a way that cannot be accounted for photographically—because the wire from the outer attachments to the *cabane* is quite straight (distortion would curve this also), although the attachments themselves are not in line—because the fabric covering the wings is puckered, as it would be if the leading spar were bent backwards, and because the *cabane* line and the propeller line are straight.

FLIGHT

THE VOL PIQUÉ.

By J. H. HUME-ROTHERY, M.A., B.Sc.

(*Concluded from page* 1049.)

[FOLLOWING upon a request made at the time of the last Olympia Show, Mr. J. H. Hume-Rothery has been devoting a great deal of his time to the mathematical investigation of the conditions represented by the forced dive as a consequence of being partially stalled in the air. The question as to the least height in which it is possible to recover horizontal flight after being stalled is a matter of first-class importance to pilots, for there is evidence that more than one accident has happened as a consequence of being unable to flatten out in the height available. We trust, therefore, that Mr. Hume-Rothery's article, which represents infinitely more labour than is apparent from the abbreviated and simplified form in which he presents his conclusions, will be read with the interest and appreciation that it deserves.—ED.]

IN the course of working out these calculations one point showed itself very clearly: a point which when once noticed is perfectly obvious. It is that when diving downwards no use of the elevator, however hard it may be put up, will cause an immediate flattening of the course of the aeroplane unless the velocity exceeds a certain value, which depends on the angle of descent. For the course of the aeroplane to flatten (*i.e.*, curve upwards) the lift of the wings must be greater than the component of the force of gravity at right-angles to the course of the aeroplane. And even with the angle of incidence at its maximum ($12\frac{1}{2}^\circ$) the lift will be insufficient below a certain velocity, depending on the angle of descent. In Fig 5 I have plotted for the aeroplane BE 2 this critical velocity for each angle of descent as the upper curve. For example at an angle of descent of 30° putting the elevator hard up will not cause flattening unless the velocity exceeds 54·9 ft. per sec. If the velocity is less than this the steepness of the descent will continue to increase (though much less rapidly than if the elevator were in its normal position) until the velocity has increased sufficiently.

This diagram also shows that it is impossible to make this aeroplane move horizontally even for a moment unless its velocity equals or exceeds 59 ft. per sec. To fly horizontally for any length of time at such a speed would be probably impossible as the large angle of incidence ($12\frac{1}{2}^\circ$) would need an excessive thrust, but it might be possible for a skilful pilot to bring the aeroplane's course horizontal for an instant and enable him to effect a landing. Some velocity must always be lost in the last stages of flattening out (as may be seen by looking at Figs. 1, 2 and 4), and so unless the velocity were well over, say, 65 the final flattening could not be effected. An emergency flattening out of this description would, of course, demand much less vertical fall than the flattening out with recovery of proper velocity that we have been considering, but would be a hazardous affair, as no choice of landing would be possible. Some of my abortive numerical calculations for the best method of diving indicate that if a pilot should find himself with greatly insufficient velocity (say little over half the proper speed) rather too near the ground and his engine fails, his best procedure will be similar to that already described for the best dive, but the first portion of the dive must be shortened and then the angle of incidence increased much more rapidly. Hence after an almost instantaneous strong forward jerk of the elevator (to give the downward swing and prevent pancaking), it must at once be pulled firmly back to give an angle of incidence that is large but considerably short of the critical angle of $12\frac{1}{2}^\circ$, and then the backward motion increased till it is hard up. As the whole manœuvre will not occupy more than three to four seconds, it would be very difficult to judge such movements correctly, but unless the forward jerk is given to the elevator and the nose of the aeroplane pointed well down, the aeroplane will

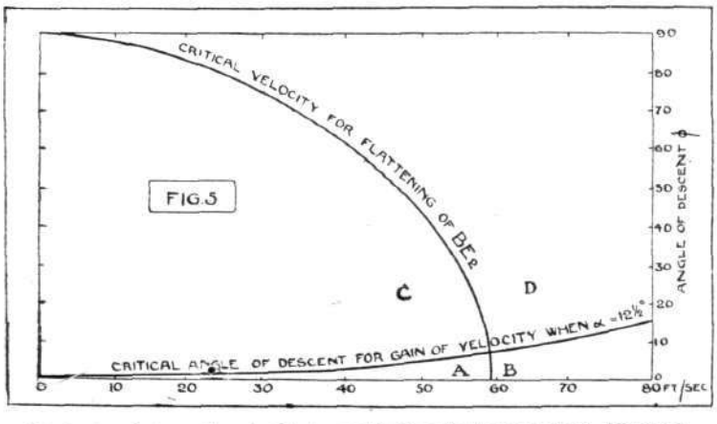

FIG. 5

never regain enough velocity to enable it to flatten out at all, however hard the elevator is put up. For just as there is a critical velocity for each angle of descent, below which flattening out is impossible, so also when the elevator is put to give the maximum angle of incidence, $12\frac{1}{2}^\circ$, for any velocity there is a critical angle of descent, or the drift will exceed the forward component of gravity and the velocity will decrease. I have plotted this for BE 2, as the lower curve in Fig. 5. For example, at a velocity of 70 ft. per sec., with the elevator up to give the maximum angle of incidence, $12\frac{1}{2}^\circ$, the velocity will decrease unless the angle of descent is greater than 12°.

These two curves divide the diagram into four different regions, which I have lettered A, B, C and D. If an aeroplane has the velocity and angle of descent which would place it in region A, putting the elevator hard up to give $12\frac{1}{2}^\circ$ incidence will not cause any flattening, and will further reduce the velocity, and would therefore seem wholly injurious. In region B it will cause flattening, though at the loss of velocity, which may be quite justifiable at the final flattening out after a dive or to effect an emergency landing. In C it will not cause flattening, but the velocity will continue to increase, so that it will probably soon pass into the region D, where it would also begin to flatten. This must not be taken to imply that in these regions such a large angle of incidence is advisable, but rather as a warning of its danger under the conditions of low velocity and angle of descent represented by the region A.

If very close to the ground, however, so that there was no chance of regaining velocity or flattening, it might be better to put the elevator hard up and try to land in as horizontal a position as possible.

It must not be forgotten that the foregoing results have all been obtained on the assumption that the engine is not pulling, and do not apply when the engine is working. The upper curve of Fig. 5 is the only exception, as it applies equally whether the engine is or is not running.

Having completed this series of calculations it seemed advisable to try and ascertain the best method of diving with the engine running, as very possibly a different policy might be best in that case. For this purpose it was necesssary to try and ascertain what thrust the engine would give when the aeroplane's velocity varied. From the diagram opposite p. 109 of the Technical Report, and from the table on p. 252 of M. Eiffel's "Resistance de l'Air," I have been able to deduce that very approximately: Thrust $\propto \frac{1}{\sqrt{V}}$, say $= \frac{T}{\sqrt{V}}$. Within the limits of velocity with which we are dealing, the error will not exceed about 5 per cent. anywhere. I have therefore taken such a value for T that the thrust exactly equals the drift when the aeroplane is flying at its normal angle of incidence, 3°, with normal velocity of 91·6 f.p.s.

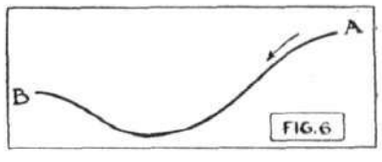

FIG. 6

An application of the Calculus of Variations shows that now two additional terms must be added to the previous expression giving the value of

$$\frac{d\theta}{dt}, \text{ namely, } -\tfrac{5}{4}TV^{-\frac{3}{2}}\frac{\sin\theta\cos 3\theta}{\cos^2\theta} - T\frac{L}{D}V^{-\frac{3}{2}}\frac{\cos^2 3\theta}{\sin 2\theta\cos^2\theta}\cot\phi.$$

These negative terms lead to the curious result that the angle of incidence must be rapidly decreased and be kept small until the velocity is a little over 93 ft. per sec. The consequence is that the aeroplane will not flatten out till its velocity is much greater than is required. No change in the initial value of θ will obviate it, and there seems no doubt that the path for the least final vertical fall (*i.e.* the least difference of height between A and B) is of the nature indicated in Fig. 6—namely, diving to a greater depth than is necessary, and then climbing again.

Although this gives no doubt the method of regaining the velocity with least fall, it is of no practical value. The aeroplane would never reach the point B if it struck the ground at the lowest point of the curve. Moreover, at that lowest point the velocity would be very great, and the equations show that the angle of incidence would also be large, so that the wing stresses would be excessive.

It may not be amiss to mention here that the equations given by the Calculus of Variations may be either maxima or minima, or only "stationary" curves, and which of these they are can be only strictly investigated by the "excess function." In the present cases they are too complicated for this to be practicable. To satisfy myself that they here give true minima I calculated accurately the vertical fall in a short portion of a curve, and found it was less for the same increase of velocity than in a neighbouring curve. I

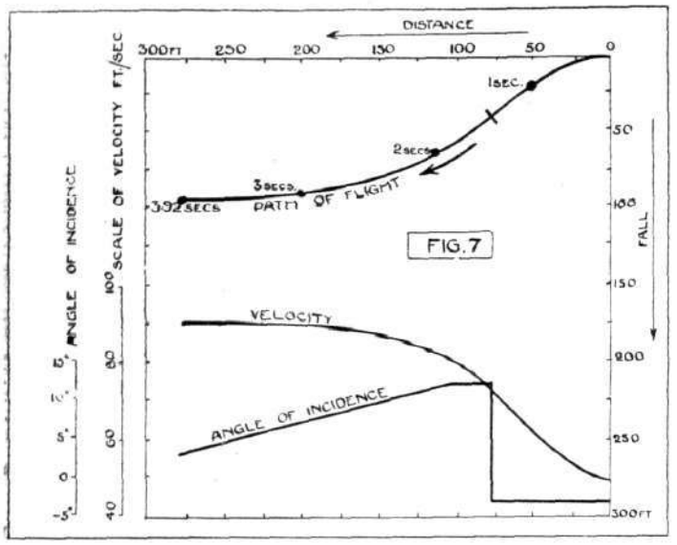

FIG. 7

have therefore no doubt that it gives the true minimum. In the former case without the engine the result itself shows that it is a minimum.

It remained therefore to try and find a path, obeying the equations as far as possible without dipping below the final point. This has been approximately accomplished in the path shown in Fig. 7, which also shows the angle of incidence and the velocity at each point. On starting the dive, the angle of incidence (whatever its initial value) is rapidly reduced to $-2^\circ 30'$, so that I have assumed it to start at this value as in the case of Fig. 4. This is continued to the point marked by the cross line about 1·5 secs. from the start. This portion of the curve obeys the equations exactly, but now to avoid the dipping curve of Fig. 6, I have performed the flattening out by another curve *which obeys the law for least fall but which is not the curve which belongs mathematically to the first portion*. I have selected the two curves as approximately giving the desired result. The first curve gives the best method of proceeding from the start to the point of junction, and the second curve the best method from that point to the end, but it does not follow that the total result is the very best, as by selecting a different point of junction, two others curves might have been found to give a slightly better result. I fancy, however, the curves chosen are very nearly the best.

In practice the change in the angle of incidence from $-2^\circ 30'$ to $12\frac{1}{2}^\circ$ could not take place instantaneously as has been assumed here, but must take a considerable fraction of a second. This will to a small extent affect the accuracy of the result.

The total vertical fall proves to be about 93 ft. The chief point of interest, however, is that during the flattening out, *the method of altering the angle of incidence is precisely the opposite to that when the engine is not running*. When the engine is not running, it is best to gradually increase the angle of incidence. When the engine is running the reverse procedure is indicated. As soon as the preliminary dive is accomplished, the elevator should be put up to give the maximum angle of incidence ($12\frac{1}{2}^\circ$) at once, and then as the flattening proceeds should be eased off much more rapidly than when the engine was stopped. Examination of the equations seems to show that this does not depend on the precise formula, adopted for the thrust, but that it holds, roughly speaking, as long as the thrust is substantially greater than the constant part of the head resistance (Hv^2)

In this case the maximum wing forces occur shortly after the elevator is put hard up, and amount to about 326 lbs. drift wing force (which occurs about $\frac{1}{4}$ sec. after the elevator is put up), and about 3,053 lbs. lift wing force, which occurs about $\frac{1}{2}$ sec. later.

While the foregoing calculations strictly apply only to the aeroplane BE 2, and their tedious character renders it impracticable to perform them for other types, there can be little doubt that they may be taken as fairly typical of most modern aeroplanes, and I venture to hope that the results obtained may prove of some assistance to those engaged as pilots.

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BRITISH NOTES OF THE WEEK.

Flying over London.

BEARING date of September 22nd, 1913, the following notice was issued from the Home Office on Monday :—

AERIAL NAVIGATION ACT, 1911.

In pursuance of the power conferred on me by the Aerial Navigation Act, 1911, I hereby, for the purpose of protecting the public from danger, make the following order :—

I prohibit the navigation of aeroplanes over so much of the County of London as lies within a circle, the centre of which is Charing Cross and the circumference is described by a radius of four miles in length.

This prohibition shall not apply to aeroplanes exempted, for special reasons, by my Order.

(Signed) R. MCKENNA,
One of His Majesty's Principal Secretaries of State.

Eight-Passenger World's Record at Hendon.

THE new Grahame-White five-seated char-à-banc at Hendon has already had its accommodation taxed to the limit, and on Monday last Louis Noel took it up with seven passengers beside himself, the combined weight of the live load being 81 stone. He was officially timed by Mr. Harold Perrin, secretary of the Royal Aero Club, to remain aloft for 17 mins. 25 secs., nearly three times as long as the previous record, 6 mins. for such a load. On the previous Thursday, the machine was taken up by Louis Noel with two mechanics as passengers, and in the course of a quarter of an hour's trip, the two mechanics walked out to the end of the planes, without affecting the stability of the machine at all.

The "Hermes" Coming South.

AFTER making a tour of inspection of the Naval air stations in the North, the parent ship of the Naval Wing of the R.F.C., commenced her journey south at the beginning of this week. On Monday evening she arrived off Blyth, where it is proposed to establish a station, in order to inspect the suggested sites and to make some test flights. The "Hermes" is due back at Sheerness on October 9th, and will call on her way down at Scarborough, Grimsby, Great Yarmouth, and Harwich.

Naval Station at Dundee.

TOWARDS the end of last week while the "Hermes" was at Dundee to enable the suggested locations for a naval station to be inspected, some very good flying was done by Lieut. Gaskell on one of the machines carried on board. On the 18th inst. a large number of members and officials at the Dundee Harbour Trust inspected the "Hermes," and took great interest in the repair work which was being done to one of the naval biplanes on board.

A Mishap at the Manœuvres.

ONE of the B.E. machines taking part in the manœuvres met with a serious mishap on Monday afternoon. Lieut. Chinery was bringing it back after a reconnaissance with Lieut. Playfair as passenger, and apparently, while making a spiral *vol plané* the machine side-slipped to the ground from a height of something over 100 ft. Assistance was quickly at hand, and the pilot was found standing just by the machine, but as he walked towards the approaching officers he fell and was picked up unconscious. He had sustained a broken arm and dislocated shoulder. Lieut. Playfair was still under the wrecked machine and was seriously injured. He was taken as soon as possible to the hospital at Rugby.

Southampton to Dover in a Sopwith.

OUT of the fog which obscured the south coast from Brighton to Dover on Saturday morning, Lieut. Spencer Grey arrived at Dover, having flown over from Southampton on a 50 h.p. Sopwith biplane in 75 minutes.

Col. Seely Flies Again.

QUITE a little excitement was caused at Hurley, about two miles from Marlow, on the afternoon of the 18th inst., by the arrival of three army aeroplanes, one of them hailing from Montrose. Col. Seely also arrived in a motor car and went for a trip on one of the machines—a Farman—piloted by Lieut. Stockford.

Mr. Kauper Convalescent.

IT is good news to hear that Mr. Kauper had, by Thursday of last week, so far recovered from the injuries sustained in the Circuit of Britain Race as to be able to leave the hospital at Dublin. All his injuries are healing up well.

Mr. Harold Blackburn at Harrogate, &c.

ON Monday, last week, Mr. Harold Blackburn, on the 80 h.p. Blackburn monoplane, left Ripon, where he had been giving exhibition flights during the week-end, for Harrogate, taking Dr. Christie, the owner of the machine, as passenger. They landed on the Stray at Harrogate, after doing the flight in 10 mins. at an altitude of about 2,000 ft. At 11.50 Monday morning, Mr. Blackburn started for a trip to Bridlington and back, with Mrs. Leigh as passenger. Mrs. Leigh, who is nearly 70 years of age, is probably one of the oldest ladies who has made such a long trip. They did the 65 miles to Bridlington in a little under the hour, having passed over York and Driffield and encircling the Bay before alighting. The return journey was started at 3.50 in the afternoon, and Harrogate reached 40 mins. afterwards.

The same evening Mr. Harold Blackburn took Dr. Christie up for a flight over the Stray, making some fine banked turns and spirals. On Thursday, Lt.-Gen. Broadwood went for a short passenger trip at Harrogate. They attained an altitude of 4,000 ft., and were flying for about a quarter of an hour. Later on Dr. Christie again accompanied Mr. Blackburn, when they did some fancy flying. Mr. Blackburn was again flying with Dr. Christie on the Friday.

On Saturday, Dr. Christie and Mr. Blackburn left Harrogate for Doncaster, where they arrived after a 40-min. flight. On Saturday afternoon Mr. Blackburn was giving exhibition and passenger flights, taking up seven different passengers during the course of the afternoon. On his first flight with Dr. Christie, he gave a very brilliant display of sharp banked turns, showing the wonderful control he has over the machine. After the exhibition they left just before dusk for Wetherby, where they were staying the night. The distance from Doncaster to Wetherby is about 30 miles. They returned to Doncaster on Sunday noon to give a further exhibition there. During the course of Sunday, about 12 passengers took trips in the machine.

Sunday at Hendon.

SUNDAY afternoon was gloriously fine, a large number of visitors attending. Of flying there was plenty, from early in the afternoon till late in the evening. The flights were numerous, but practically without incident, except that Hamel flew to Brooklands and back on his "penguin" Morane-Saulnier, the journey out taking 11½ mins., a speed of about 104 m.p.h. Pierre Verrier and passenger again repeated the "standing up whilst in flight" stunt, and the "G.-W." five-seater char-à-banc, piloted by Grahame-White and Louis Noel, started its first duties in taking up members of the public as passengers. The pilots who flew during the afternoon were: W. Birchenough and M. D. Manton ("G.-W." 'buses), Geo. W. Beattie (Wright), W. L. Brock (Blériot), B. C. Hucks (Blériot), P. Marty (Morane-Saulnier), and F. P. Raynham (Avro).

Testing the Wight Hydro-aeroplane.

ON Thursday, Friday, and Monday last week the Wight navyplane was out for tests, flying being carried out in all for about 15 hours. With 1,000 revolutions only of the motor the machine climbed at about 200 ft. per minute with passenger and full load. In a very gusty 15–20 mile wind the machine behaved very well, and could get off the water with a "following" wind. When the machine was tried with two passengers in addition to the pilot, the extra weight seemed to make very little difference. When up 1,000 ft. a large number of gliding tests were made with the motor stopped, propeller stationary, and the gliding angle was very good in every case. The landings with engine stopped left nothing to be desired.

For the Cody Memorial Fund.

AMONG the last contributions to the Cody Memorial Fund, which is now closed, was a gift of £50 from Queen Alexandra and a donation of a hundred guineas from the Society of Motor Manufacturers and Traders. As a result of the Cody Matinée performance at the London Hippodrome, a cheque for £450 has already been paid by Messrs. Moss's Empires, Ltd., and it is expected that when the accounts are fully made up there will be another £50 available.

Mr. Dyott Back in England.

THE ranks of British aviators have received a welcome addition in Mr. G. M. Dyott, who is now back from the States after a series of very successful exhibition flights on the clever little monoplane of his own design which was described in these columns in our issue of April 26th last. The machine is now being overhauled and after having a new engine fitted Mr. Dyott hopes to be flying it at Hendon before very long.

G. L. Temple Arrives Back at Hendon.

ON his two-seater Blériot, G. L. Temple completed his journey to London on Monday. Starting up from Valines on Sunday morning, he flew to Crotoy to see some friends, and then went along the coast to Calais. Heavy fog prevented him crossing the Channel until 4.15 p.m., when, after crossing in 50 mins., he made his way to just by Tonbridge. Owing to darkness and want of petrol he landed quite close to an encampment of hop-pickers, who manifested the most lively interest in the machine. The remainder of the journey to the Hendon aerodrome was covered in about an hour on Monday morning.

The Possibilities of China.

A CORRESPONDENT writing from Tientsin states that British manufacturers of aeroplanes ought not to neglect China as a market. It is said that there are two things that every Chinaman loves—a clock and kite flying—and as the Chinese become excellent mechanics in a very short time, there is no reason why they should not take to flying even more readily than they have done to motoring especially as the flyers would not be tied down as the motorists are by bad roads. Although the Government coffers are empty, there is a good deal of money in the hands of private Chinese, as is evidenced by the large number of motor cars which are being purchased. Our correspondent offers to help British manufacturers with any information he possibly can give and we shall be pleased to put those who are interested in direct communication with him.

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AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Election of Fellows.—As a result of the ballot for Fellowship, the following have been duly elected Fellows of the Aeronautical Society:—Horace Darwin, F.R.S.; W. H. Dines, F.R.S.; J. W. Dunne; Dr. R. T. Glazebrook, F.R.S.; Sir George Greenhill, F.R.S.; Col. H. C. Holden, F.R.S.; Alec Ogilvie; and Dr. W. N. Shaw, F.R.S. BERTRAM G. COOPER, Secretary.

ONE OF THE NEW 80 H.P. BRISTOL TRACTOR BIPLANES ON SALISBURY PLAIN.—In the machine are Messrs. Pixton and Jullerot, who are just off for a trip.

FOREIGN AVIATION NEWS.

Flying Across the Mediterranean.

TUESDAY last saw Roland Garros achieve his ambition of flying across the Mediterranean from France to Africa. He arrived at St. Raphael on Monday, and in view of the favourable state of the weather at once set about completing the arrangements for making the attempt at the earliest possible moment. Owing to the distance which had to be traversed Garros intended to come down at Cagliari, the capital of Sardinia, in order to fill up with petrol, but, as a matter of fact, he was going so well that he passed this point at a great height. Leaving the Frejus Aerodrome at St. Raphael at 5.45 a.m., and steering straight across the Mediterranean, over Sardinia, he made a safe landing in Bizerta, in Tunisia,

Sketch map showing the points of Garros' Cross-Sea Flight.

at 1.45 p.m. The distance between the two points is about 460 miles, and after his eight hours flight there still remained in the tank 5 litres of petrol. So confident was Garros in his Morane-Saulnier machine, which had an 80 h.p. Gnome engine and Chauviere propeller, that he did not deem it necessary to accept the Government's offer to be consorted by a cruiser, but the French naval authorities nevertheless took the precaution to have a number of torpedo boats cruising along the line of flight. One of the first telegrams of congratulations received by Garros was from the Premier, M. Barthou. Later in the day on Tuesday Garros restarted from Bizerta to fly to Tunis, but owing to the darkness he was compelled to land at Protville some 15 miles short of his destination. The next morning he went on and reached the Kassar Said Aerodrome, where his machine was immediately dismantled for return to France.

Revised Rules for French Superior *Brevets*.

ACCORDING to an order just issued by the permanent Inspector-General of military aeronautics, the regulations governing the issue of military superior *brevets* in France will be more stringent after January 1st, 1914. The conditions require: 1, a flight of at least an hour at a height of 1,000 metres; 2, a *vol plané* with motor stopped, from a height of at least 500 metres, the landing being effected not more than 200 metres from a predetermined spot without any switching on of the motor being required; 3, an examination in theory; 4, three cross-country flights, one a triangular voyage of 200 kiloms., the smallest side of the triangle to be not less than 20 kiloms.; the course must be completed, without change of machine, within 48 hours and with two intermediate landings at points indicated in advance; the second test will be a non-stop flight of at least 150 kiloms. in a straight line over a course previously announced, while the third flight will be 150 kiloms. in a straight line over a set course, with an optional landing, to be completed between sunrise and sunset. The first test, one hour at 1,000 metres, may be made during either of the three cross-country flights.

Flying at 260 k.p.h.

ON the 100 h.p. Hanriot monoplane, now known as a Ponnier machine, which took part in last year's Gordon-Bennett race, Emile Vedrines attained the phenomenal speed of 260 k.p.h. over the ground on the 16th inst. Waiting until there was a strong south wind blowing, he started from Mourmelon and flew the 26 kiloms. to Rheims in 6 mins.

An Italian Height Record.

AT the Mirafiori aerodrome, near Turin, Sergeant-Major Petazzi beat the Italian passenger height record, taking up Engineer Pomilio on a 80 h.p. Gnome-Farman to a height of 2,200 metres.

New Ae.C.F. Council.

AT the meeting of the Committee of the Aero Club of France on the 18th inst., following the recent upset, a new Council was elected. M. Deutsch de la Meurthe was again elected president, while M.M. Barthou, Soreau and Balsan were voted to the vice-presidencies. M. G. Bescanson was elected secretary, and M. A. Granet treasurer. These, with M.M. Commandant Ferrus, P. Esnault Pelterie, Tissandier, Leblanc and Rousseau, make up the new Council.

Pegoud Loops the Loop.

ON Sunday, Pegoud continued his experiments in upside down flying at Buc, and after two successful demonstrations of the corkscrew twist he succeeded in really looping the loop, his machine diving steeply for about 300 metres, and then by the force of its impetus alone carried him round in a circle of about a 100 metres diameter, until it was in a normal flying position again ready to return to the ground.

The Corkscrew Twist on a Biplane.

THAT Pegoud's marvellous flights on the Blériot is not entirely due to the personal equation was demonstrated by the fact that Chanteloup on a Caudron biplane with 80 h.p. Gnome engine on Saturday and Sunday last carried out some similar tests at Douai. He turned the machine over on its side and let it side-slip for some distance, and then gradually got it upside down, and flew in that way for a few seconds before making another dive and regaining the normal flying position.

Two Fine Flights by Gilbert.

WISHING to practice at Rheims for the Gordon-Bennett meeting, Gilbert, on the 18th inst., flew on his Morane-Saulnier with 60 h.p. Rhone motor from Villacoublay to Rheims in 1 hour 15 mins. Two days later he made practically the same journey, but starting from Issy on a Deperdussin monoplane with 80 h.p. Rhone motor, and his time then for the 160 kiloms. was 55 mins.

Henry Farman Has a Mishap.

TO all who have followed aviation from its early days it came as a great shock to hear that Mr. Henry Farman, who has so consistently tested and flown the various machines he has designed, had been injured. The first reports, however, grossly exaggerated the incident, but it appears that while flying with Mme Darcy at Etampes he was completing a spiral descent when a wing tip touched the ground, causing the machine to pull up abruptly. Mr. Farman had a leg bruised, while the passenger escaped with contusions on the arm.

Seguin Returns to France.

AFTER his splendid non-stop flight from Paris to Berlin, Seguin set out to fly back on his Farman machine on the 15th inst. He, however, was brought down by the wind at Gottingen, and had to stay overnight. On restarting the next morning, he got on to Coblentz, where another stop was necessary, and it was Sunday last before the weather had moderated sufficiently to allow of further progress to Rheims.

A Farman for the West Indies.

AT Etampes, on the 16th inst., Rougerie was testing the Farman machine which has been purchased by Mr. Madeley, who intends taking the machine to the West Indies. During the trials the owner occupied the passenger seat, and although it was loaded with sufficient fuel and supplies for four hours, the machine easily climbed 500 metres in 5 mins.

Flying to the Manœuvres.

RECEIVING orders to join escadrille 5 at the manœuvres, Lieut. Collard set off last week from Epinal, and after a flight of 600 kiloms. through rough weather, especially in the neighbourhood of Bordeaux, he reached his destination, Agen, without a hitch.

Another Automatic Stability Machine.

AT St. Martin d'Auxigny (Cher) a soldier named Duchereux has practically finished a monoplane which is fitted with a system which he claims gives automatic stability. The machine has a span of 7·02 metres, and is 5·06 metres in overall length. The planes are so arranged that the angle of incidence may be readily adjusted to suit any circumstances.

French Naval Aviation.

THE French aeroplane mother-ship "La Foudre" on Sunday last arrived off Marseilles in order that experiments might be made by Lieut. Cayla and Ensign Delage with the Farman and Nieuport hydro-aeroplanes which were carried on board.

Three Good Blériot Pupils.

AFTER only 28 days of training at the Blériot school at Buc, Capt. Boucher, Lieut. de Serre, and Sergeant Duran, each made, by way of finishing up, a flight or more than an hour's duration, the two first at a height of 500 metres, while the latter went up more that 1,000 metres.

A Night Flight by Guillaux.

ON the afternoon of the 17th inst., Guillaux, on his Clement-Bayard, flew from Issy across Paris to Villacoublay, but was unable to start back owing to a very heavy rainstorm, until after dark. He knew the route so well, however, that he started off without hesitation, taking Sergeant St. Andre as passenger, and made a safe landing in the dark at Issy.

Guillaux's Lead for Pommery Cup.

THE French Aerial League has now received from the Army Geographical Department a report upon the distances flown by Brindejonc des Moulinais and Guillaux in the Pommery Cup competition. For his flight from Biarritz to Brackel, Guillaux is credited with 1,386·067 kiloms., while the distance of Brindejonc's trip from Villacoublay to Warsaw is given as 1,382·055 kiloms., so that Guillaux leads by a little over 4 kiloms.

Fischer Tries for Michelin Cup.

UNDETERRED by the magnitude of Fourny's 23 day flight for the International Michelin Cup. Fischer on a Henry Farman machine with 80 h.p. Gnome, commenced an attempt to try and beat it on Sunday morning. He was flying over the usual Etampes-Gidy course of 101·2 kiloms. and on the first day completed seven rounds totalling 708·4 kiloms. Owing to indisposition he had to give up on the following day after covering four more rounds.

Wind *versus* Engine.

ACCOMPANIED by his mechanic on his biplane, Sapper Irat, going from Montmedy in the direction of Havre, landed when it was quite dark, in the neighbourhood of Soissons, on Sunday. He started again the following morning, although there was a very strong wind blowing against them, and after being up 35 mins., they came down to find that they had only covered a distance of three kiloms.

Across Country with Three Passengers.

A GOOD Sunday afternoon jaunt was made by Champel on his new Anzani-engined biplane last Sunday afternoon. Accompanied by his mechanic and two other passengers, he flew from Juvisy to Montargis, and, after visiting some friends there, returned to Juvisy.

A Borel Superior Pilot.

BY way of qualifying for his superior *brevet*, Mouthier, on Monday, on his Borel monoplane with 50 h.p. Rhone engine, flew from Amberieu to Tournus and Lyon afterwards returning to Amberieu, a total distance of about 260 kiloms.

Waterplane Meetings at Cherbourg.

IN view of the proposal to hold a race for hydro-aeroplanes between Southampton and Cherbourg at the end of July or early in August next year, various high municipal and other officials of Cherbourg have been making enquiries at Southampton with a view to ascertaining what support they could rely upon from this side.

Moreau to Try for Bonnet Prize.

ALTHOUGH very little has been heard lately of the Moreau automatic stability machine, it is stated that M. Albert Moreau intends very shortly to try for the Henri Bonnet prize, which requires a distance of 20 kiloms. to be covered, over a course not more than five kiloms. round, without any of the controls of the machines, other than the steering gear, being touched.

Audemars Proposes Long Flight.

WHEN his work at San Sebastian and at the Russian Military Trials is over, Audemars proposes to fly from Paris to Geneva and on to Berne. Subsequently he will probably join Garros in a trip to South America, where these aviators have been offered some tempting engagements.

A Prize for Visitors to Spa.

A CUP value £1,000 has been offered by the firm of Dentz and Gelderman tothe town of Spa, and it will be awarded to the aviator who, during 1914, lands in Spa after flying from the centre farthest away.

Crombez Joins Belgian Army.

CROMBEZ who did such splendid work in connection with the aerial post at the Ghent exhibition has decided to accept an offer of the Belgian Government, and he is to be appointed to the Flying Corps, stationed at Brasschaet.

Fatal Accident in Belgium.

FOLLOWING upon a fall with his machine at the Brasschaet Aerodrome, near Antwerp, the Belgian Lieut. Godefrey died from his injuries in the Antwerp hospital on the 18th inst.

Herr Friedrich Back in Berlin.

SATURDAY last saw Friedrich on the Etrich-Taube arriving safely at the Johannisthal aerodrome at Berlin. He started from Hendon on Wednesday of last week at a quarter to four, being accompanied by Herr Igo Etrich instead of Herr Rozendaal who was to have been his passenger. Passing by way of Folkestone, the Channel was negotiated, and a safe landing was made at Beaumarais, near Calais, at 20 mins. past five, the trip from London having taken 1 hr. 35 mins. After two days' delay, the two aviators restarted from Calais on the 19th inst. at 5.36 a.m. They were, however, caught in a mist between Vieux Dieu and Contrich, and were forced to land, but a little later they went on and reached Hanover. The next day, Saturday, they continued, and arrived at Johannisthal about the same time that the Zeppelin L1 was floating over the aerodrome.

The San Sebastian Waterplane Meeting.

A START was made with the San Sebastian waterplane meeting on Monday, when some good flying was done by Renaux on a Maurice Farman, Cartery and Audemars on Moranes and Chemet and Divetain on Borels.

Military Aviation in Holland.

AFTER a protracted inquiry as to the present state of military aviation, the Dutch Government has ordered from Messrs. Farman an escadrille of biplanes. Three of these machines were tested at Buc on the 16th inst., by Bille, in the presence of a deputation of Dutch military officers, and with a load of 275 kilogs. the machines mounted 500 metres in 5 mins. 10 secs., 5 mins. 20 secs., and 5 min. 25 secs. respectively.

Chevillard in Sweden.

CHEVILLARD, who on Sunday week on his Farman, went from Copenhagen to Gottenberg, crossing Copenhagen Sound, on the 19th inst. went on from Halmstadt to Jonkoping, covering the distance of 270 kiloms. in 1 hr. 40 mins., his altitude being about 1,200 metres practically the whole way. On Saturday he flew on to Malmstatt with a passenger, taking 55 mins. for the 129 kiloms. Later he flew to Escilstuna in an hour, and on Sunday morning he went on from there to Stockholm, doing 100 kiloms. in an hour.

Fatal Mishaps in Morocco.

ON Tuesday night a French military aeroplane which had flown *via* Saffi from Casablanca fell into the sea off Mogador, and, although boats were quickly to the rescue, only the passenger, a private soldier, was saved. The following day Lieut. Souleillant was fatally injured at Ujda on the Morocco–Algeria frontier, his machine falling 150 ft. during a *vol plané*.

Cross-Country in Russia.

ON the 20th inst., Lieut. Poplavko left Moscow with the intention of flying to St. Petersburg. After 3½ hours in the air he landed at Sver, and then, after a rest of two hours went on to Vichnii-Volotchek.

A New Russian Aerodrome.

AT Marva, between Revel and St. Petersburg, the Russian Military authorities have decided to construct an aerodrome including an equipment for repairing machines. A searchlight will be installed for the purpose of notifying at night the whereabouts of the flying ground.

A Russian Officer Killed.

WHILE flying at the Sebastopol aerodrome, the Russian military pilot, Lieut. Fischer, fell from a height of 650 feet and was instantly killed.

Public Funeral for Roumanian Aviator.

A BUCHAREST message states that the funeral of the young Roumanian pilot, Vlaiclu, on the 17th inst., was attended by a crowd of about 100,000 persons. The Minister of War attended the funeral, and, after a speech in the name of the King and the Army, fixed a military decoration on the coffin. Three airmen flew over the cortege as it was making its way to the cemetery.

Two Fatalities in America.

ON the 16th inst., while flying at Galisburg, the machine of Max Lillie fell from a height, 450 ft., and the pilot was killed, while on the following day a Chicago pilot—Davis—was killed while flying at Wisconsin.

Clerget and Blin Joined Together.

IT is announced from Paris that under the title of Clerget, Blin et Cie., MM. Clerget and Blin, the well-known automobile and aviation engineers, have joined hands—a very valuable combination.

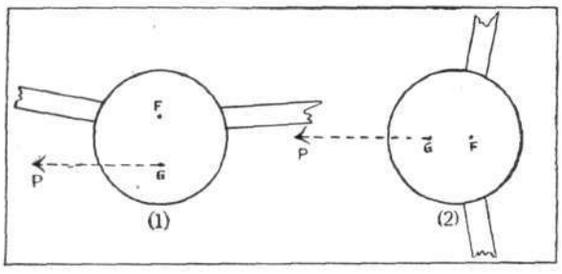
Models

Edited by V. E. JOHNSON, M.A.

Mr. Kilshaw's Proposed Experiments.

"I THANK you for your courteous review of my little letter," writes Mr. H. R. Kerruish. "I quite agree that the whirling table is useful in the respects you mention, but its sphere of utility is very limited. May I correct you as to my pendulum apparatus? It does not oscillate in a vertical plane; it is suspended by universal gimbals, and under the lift and drift of the aerofoil (which is attached *vertically*) it describes a curiously curved path, which is automatically registered, and by examination of the curve one can deduce its lift, drift, and coefficiency of skin friction.

"I am afraid that Mr. Kilshaw's application of a whirling arm to determine stability is fundamentally wrong in several points. In



the first place, his model will not remain in a horizontal position when the arm is revolved. Let me make this point clear by some diagrams. Let F be the point of suspension. The line between the two points of suspension will be perpendicular to the plane of the paper. Then the centre of gravity, G, will either be below F, or will coincide with F. It cannot be above, as the model would swivel about F, and turn upside down. Now when the c.g. is below F, as in 1, when the arm is revolved the centrifugal force, P, acting through G, will tilt the model about F, until F and G are in one horizontal line, as in 2. If the c.g. should coincide with F, then the system will be in a state of neutral equilibrium, and when the wind-gust hit it it would remain canted over. The centrifugal force would be ample to produce the first effect. If we suppose the model to have a speed of translation of 45 m.p.h., and the radius of the whirling arm to be 4 ft., then we have :—

Centrifugal force in lbs. wt.

$$= \frac{mv^2}{gr}$$

where m = mass of model
v = vel. in f.p.s.
r = rad. of arm in ft.
g = gravity acceleration = 32·2

45 m.p.h. = 60 f.p.s.

$$= \frac{m \times 66 \times 66}{32{\cdot}2 \times 4} = \frac{4356\,m.}{128{\cdot}8}$$

$$= m \times 33{\cdot}08$$

or 33 times the mass of the model.

"There is also another objection. The gliding angle of the machine is ignored. Now the gliding angle is one of the most important, if not *the* most important factor in the design of the model.

"The gliding angle determines the rate of expenditure of the stored energy of the motor, whether petrol or rubber; it has a great deal of influence on the stability factor. Mr. Kilshaw must test his stability in free flight. His whirling arm as he proposes to use it is useless; moreover, in free flight, he will be able to notice side-slipping which, as he himself points out, the whirling arm will not show. I wish it clearly to be understood that in making the above remarks I am animated by no feelings of antagonism. I highly respect Mr. Kilshaw's attempt to advance to a higher stage of model aeronautics, but I only wish to point out the defects in his present proposal."

Mr. B. Bruce-Walker also writes:—"With regard to Mr. Kilshaw's remarks concerning sideslip in speaking of models on his whirling table, may I suggest that the apparatus as he describes it is excellent for discovering whether the chief cause of stability through a dihedral angle is the 'projected area effect' or the righting couple due to the positive and negative (sideways) incidence of the two wings to the lateral wind when sideslip commences (which I, for one, am convinced it is).

"In a model pivoted in his illustration about its c.g. (or about a point slightly below the c.g., so as to be unstable when at rest) the model should right itself when canted, if it is only projected area that counts. But, I think, Mr. Kilshaw will find that a model with just the small dihedral that is so satisfactory in free flight, will have no such eagerness for the horizontal when swung round at its flying speed on his whirling table, owing to the fact that it cannot sideslip. The results, however, might easily be vitiated by the effect of centrifugal force on the body of the model or on the air carried round with the arm. But if such errors could be eliminated or allowed for some very interesting experiments might be carried out. For instance, pivoting the model with its axis slightly inclined to the circumferential motion so as to be in a state of perpetual sideslip. Or the model might be towed from the arm by a light string, although that, while allowing for a certain amount of sideways movement, would introduce new forces and directional turning movements."

Mr. N. F. H. Clarke's Experiment.

The following interesting experiment was sent us by Mr. Clarke under the impression that Mr. Kemp's machine did turn over several times in the air and was due to engine stoppage. As an attempt to reconstruct (in model form) what was originally supposed to be an accident we give it below :—

"I took," says our correspondent, "one of my models and wound it up fully, then tied the rubber to the *fuselage*, so that part only of the motor could unwind, and the propeller would run for a short time at full speed and then suddenly stop.

"When flown the model would go perfectly until the propeller stopped, and then commence to turn over sideways and dive. As the model fell it would continue to twist round and round with gradually decreasing speed until it landed on its nose. I did this several times, and in every case except one the same thing happened. In the case just referred to the model had flown rather higher than before. The same thing happened, but before the model reached the ground it recovered and flattened out, and landed with a glide. The model used was a small hand-launched one of the Canard type fitted with a single propeller. It weighs about 4½ ozs., and the main planes have a large dihedral angle. I intend to try the same experiment with a tractor model. The air was quite calm when the experiment was tried."

True Model-Construction.

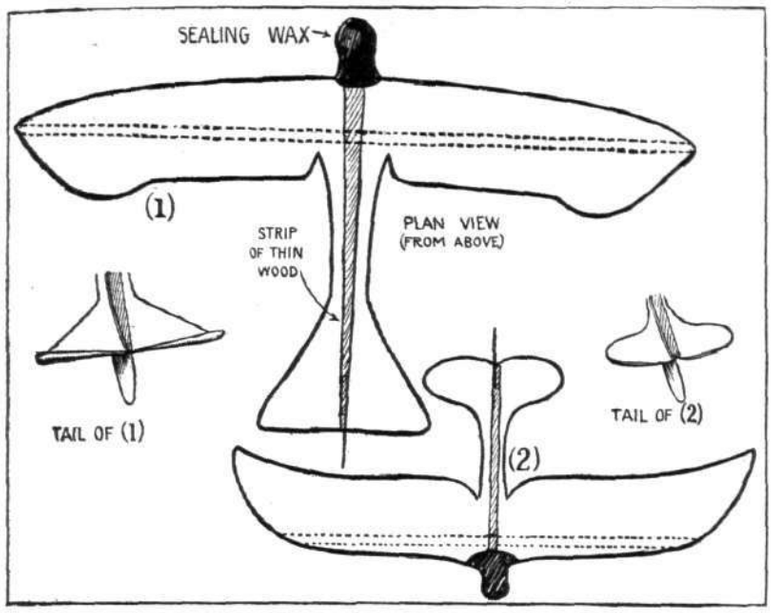
"There exists much controversy," writes Mr. W. J. Wood, "upon the respective merits of the tractor and propeller, or rear-driven machines, and I should like to express my opinion thereon with your permission. I have constructed for some time tractor monoplane models only, for the reason that this kind of model is the one which in the main adheres to the true principles of aeroplane construction, and in my opinion other types, such as twin propeller machines, rear-driven, and main plane behind kinds, are practically a perversion of the truth, and are models of machines not in use.

"Models so built, and embodying as they do such wrong lines of construction, are totally useless as imparting aeronautical knowledge, and are commercially of no value. No doubt they give more successful results, but it cannot be gainsaid that half the merits are lost because these models do not represent any large prototype in practical use.

"In all branches of model making, the principle understood to exist is that the article in miniature is a true and practical likeness to its large prototype, and it is on that factor alone judged with respect to its merits, and there is no reason why model aeroplanes should be allowed to depart from this rule as has been done hitherto.

"Strictly speaking, a 'model' aeroplane should be constructed exactly, or as near as is practicable, to the large machine, and its mode of propulsion should be similar; it should also be constructed to scale. Models departing from these general principles should not really be accepted by model associations and aviation businesses. After all, to obtain a successful flight with a model built to correct principles is worth a hundred times more than a machine which you know is only a makeshift and unlike any aeroplane used by aviators; and this is where the tractor model scores."

Referring to Mr. Wood's communication, it will be noticed that he clearly defines a "model" as a replica of a full-sized machine or type of machine already in existence; once you place such a limitation on the word model, you place so-called model aeroplanes in exactly the same category as model locomotives and model yachts. Now it has always been one of the chief aims



1. Master Anthony Asquith's model. 2. Master Robert Allardyce's model.

of FLIGHT that such should not be the case. By all means, build scale models of already existing machines: it is undoubtedly *one* of the businesses of model workers to do this; but to say that this should be the sole or even the chief aim of model work is to degrade it into a mere copying and reproductive process of ideas already worked out and known to be successful. It of itself creates nothing, leads to nothing, *i.e.*, nothing new. It has, of course, very considerable value in an educational sense, none at all in a creative one. Workmanship becomes all in all, the idea nothing. Years ago the architect not unfrequently made a model of the house he intended to build, and also the nature, &c., of the ground on which it was to be built, before a sod was turned, or a brick laid. The result being that when the house was built, it looked as if it had grown on the spot. Whereas nowadays there are places, not so very remote, either, where the houses look as if they had been built out of builders' scrap and contractors' odds and ends, transported aloft by means of aeroplanes (say), and dropped just at odd times when the pilot thought the engine showed signs of failing—or he desired to climb to higher altitudes.

That models built on other lines than those already proved successful are totally useless as regards imparting aeronautical knowledge is a statement with respect to which we cannot agree for a moment. Their commercial value—although no doubt of considerable ultimate importance—is scarcely one which concerns us.

We are perfectly acquainted with the underlying principle which prevails in model making generally, and the result of which has been that models do not occupy in this country that standing or status which they undoubtedly would do if they were looked upon as of high experimental value in the development of new ideas and as one of the chief aids to original research.

Let us keep model aeroplanes as free from the limitation which Mr. Wood would impose on them as long as possible, even if we have to find another word than "model."

Master Anthony Asquith's Glider.

"I thought perhaps you would like this glider," writes Master Asquith (10, Downing Street).

"It is supposed to be a copy of the Westlake monoplane, the scale drawings of which were published in a recent issue of FLIGHT. I am afraid it is rather battered and a little warped, but for all that it is an excellent glider. I tried it to-day in quite a gusty wind, it behaved splendidly, banking up against the wind. It rose about 10 ft., and then turned round and glided about 60 ft. If you send this glider very hard and very much down, it will rise up vertically and sometimes loop-the-loop. My friend, Robert Allardyce, is also sending a glider which is very good too, though smaller."

We are very much obliged to these young gentlemen for the two excellent gliders which they have been so good as to send us, and which we reproduce herewith. We have tried them personally—they are both very good, and quite long glides can be obtained from them, especially if the rear edge of the tail be slightly upturned.

The Edinburgh Aeronautical Society.

A model section of the above society has been formed with a yearly subscription of 5*s.*, half-yearly 2*s.* 6*d.*

There will be a model meeting at Lawiston Farm, Davidson's Mains, on Saturday, October 4th, at 3 p.m., when there will be competitions for distance and duration, for which cash prizes will be awarded. Full particulars from the hon. sec., G. T. Cooper, 41, Drumsheugh Gardens, Edinburgh. Anyone interested is heartily invited to attend.

A Canadian Model.

Messrs. R. E. Machappil and A. D. Legge-Wilkinson (Winnipeg) send us the following account and accompanying illustration of a model biplane (Canard-type), constructed by them:—

"*Principal Dimensions*: Span of upper main plane, 36 ins.; span of lower main plane, 30 ins.; length of *fuselage*, 34 ins. The wheels are connected to the chassis by rubber bands, and we do not anticipate any breakages in that part of the machine. The motive power is supplied by two propellers, 12 in. diam., driven by 24 strands of strip rubber.

"We have not yet tried the model outside under power, but experiments from the roof of the house showed a fair gliding angle, and we expect good results. Messrs. J. Bonn & Co. (97, New Oxford Street) supplied the fabric, ball bearing brackets, wheels, &c., all of which items are highly satisfactory."

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

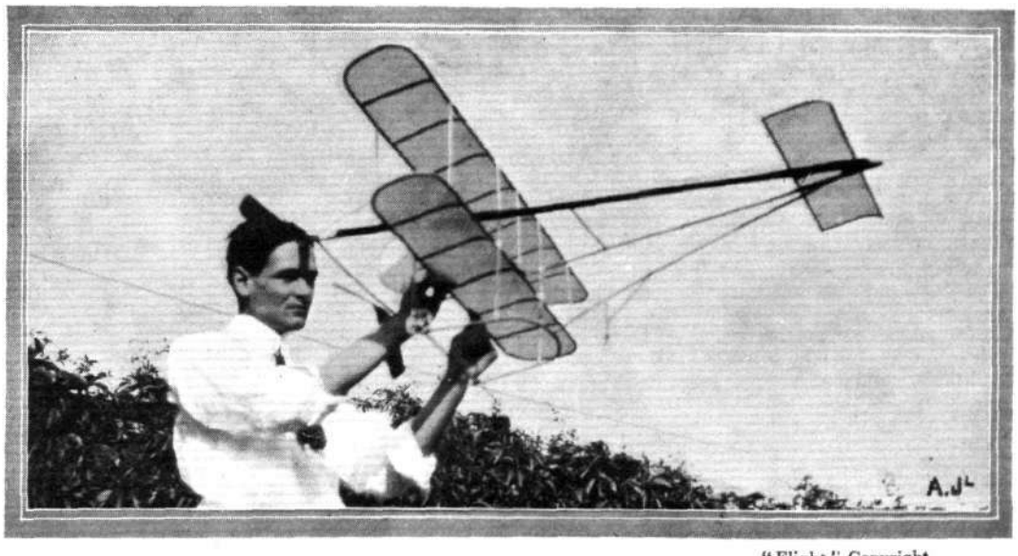
British Model Records.

Single screw hydro., off-water	...	... Duration ...	L. H. Slatter ...	35 secs.
Single-tractor screw hydro., off-water	...	Duration ...	C. C. Dutton ...	29 secs.

Official Trials.—The monthly official trials take place to-day (Saturday), on the ground of the Leytonstone Aero Club. Details as to route, see last week's notices.

"Model Engineer" Exhibition.—Entries are now commencing to come in, but to make the model aero section a success the organizers and council appeal to all the secretaries to help, and to the members to make it known so as to ensure a good entry. During the last week three power models have been entered. The flying trials in connection with this exhibition have been fixed for October 25th. The hand-launched and r.o.g. trial will be held at the London Aerodrome in the morning, and the hydro. in the afternoon, on the Welsh Harp Water.

Competitions.—The hydro. competition for single-screw machines was held on Rushmere Pond, Wimbledon Common, on Saturday afternoon, and attracted a good entry. The result was: 1st, Mr. L. H. Slatter with 98 marks; 2nd, Mr. C. C. Dutton with 85 marks; 3rd, Mr. F. W. Jannaway with 80 marks. Mr. Slatter winning the silver rose bowl, presented by Mr. V. E. Johnson, M.A., Mr. C. C. Dutton, the cup, presented by Mr. G. Rowlands, Mr. Jannaway winning the bronze medal of the Association. Also a junior distance h.-l. competition was held on the Plain—the results being: 1st, S. Cannell (unattached



"Flight" Copyright.

Messrs. R. E. Machappil's and A. D. Legge-Wilkinson's model.

382 yds., winning silver medal, presented by Star Aeroplane Co.; 2nd, F. Wilkinson (Wimbledon and District Ae. Club), 176 yds., winning r.o.g. model, presented by Star Aeroplane Co.; 3rd, L. F. Hutcheon (Wimbledon and District Ae. Club), 161 yds., winning 10s. aero requisites, presented by T. W. K. Clarke and Co.; 4th, L. C. Tucker (Wimbledon and District Ae. Club), 148 yds., winning boy's book of aeroplanes, presented by Lieut. T. O'B. Hubbard, R.F.C. The judges were Messrs. V. E. Johnson, Vincent Smith and the hon. sec. Mrs. W. H. Akehurst presented the prizes to the winners.

Scouts' Competitions.—At the rally of 3,000 scouts of North London at the Alexandra Palace, on Saturday, two competitions for models were held for prizes given by Mr. C. Grahame-White. The winner in the r.o.g. contest was Scout A. W. Savage, of the 57th North London Troop. In the hand-launched contest a keen struggle was fought, the placing of the first three was: 1st, Scout Campbell; 2nd, Scout A. W. Savage; 3rd, Scout G. E. Slatter. The judging was ably carried out by Scout-Master F. T. Pringuer (of this Assoc.), assisted by Scout-Master Winter, as clerk of the course. Major B. Baden-Powell, past president of the Association, was present with Gen. Baden-Powell. The council feel that much can be done in aviation by instructing the scouts, and appeal to scout-masters to create an interest in their scouts winning the airman's badge.

Letters of Thanks.—Letters have been received from Mr. C. Grahame-White for the Association appointing judges for the above scouts' rally, also from the joint committee of the Aerial League for the help given by the members in giving demonstrations at Earl's Court on "Cody Day."

Model Competition to be held on Wimbledon Common, on Oct. 11th, at 3 o'clock. Entries close Saturday, Oct. 4th. Duration and stability competition for single-tractor screw models rising from the ground under their own power. Free to members; non-members entrance fee 2s. Prizes: 1st, trophy; 2nd, bowl; 3rd, bronze medal of the Association. Tests: duration of flight, stability. Minimum marks, 100, viz., 75 for duration, 25 for stability. Rules: 1. Competitors may submit models of any kind. 2. Models must not weigh less than 6 ounces. 3. Competitors must be at the judges' flag at 2.30 o'clock; those not present at that time will be disqualified. 4. Models to be timed from time of leaving ground till time of landing, or till they disappear from the observer's view. 5. Competitors will not be allowed to replace any part (or parts) without the permission of the judges. 6. Each competitor is entitled to three trials if time permits.

27, Victory Road, Wimbledon. W. H. AKEHURST, Hon. Sec.

AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc. (N. Branch) (25, CHURCH CRESCENT, MUSWELL HILL, N.).

SEPT. 27TH.—R.o.g. duration competition, 3 o'clock. Sept. 28th.—Practice, 10 a.m.

Leytonstone and District Aero Club (64, LEYSPRING ROAD).

SEPT. 27TH.—K. and M,A.A. official trials on Hackney Marshes, 3 p.m. Sept. 28th.—At 6.30 a.m., hydro work, Model Yacht Pond, Wanstead Flats. 10 a.m., near Brickfields. Sunday is the last day of competition for medals presented by Mr. Mallows and Mr. Grattan.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

SEPT. 27TH.—Flying at Sudbury; r.o.g. handicap and certificates.

Reigate, Redhill and District (THE COTTAGE, WOODLANDS AVENUE, REDHILL).

SEPT. 27TH.—Flying on Earlswood Common.

Sheffield Aero Club (35, PENRHYN ROAD, SHEFFIELD).

SEPT. 27TH.—Members go by the 12.33 p.m., Great Central Railway, to Manchester to contest against the Manchester Model Aero Club with r.o.g. machines for duration. October 4th.—General meeting at Club Room, 7.30 p.m. prompt. All members please attend; very important.

Wimbledon and District (165, HOLLAND ROAD, W.).

SEPT. 27TH and 28TH.—Flying as usual.

UNAFFILIATED CLUB.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).

SEPT. 27TH.—Woolwich Common, 3.30 to 6.30 p.m. 28th.—Blackheath, 7.30 to 10 a.m.; Lee Aerodrome, 10.30 a.m. to 12.30 p.m. The final for the South Eastern Trophy (2nd quarter) will be flown at the Blackheath meeting, weather permitting.

CORRESPONDENCE.

Edinburgh to Glasgow £1,000 Prize.

[1795] We note in your issue of 20th inst., under "British Notes of the Week," a paragraph dealing with the Edinburgh to Glasgow £1,000 prize, in which it is stated that "it is remarkable that no effort has been made to win the same."

We would like to point out that at our aerodrome at Lanark we built a Scotch biplane and had fixed up negotiations for the building of an engine in Scotland, which would fulfil the conditions and carry out the flight At this point it was rumoured that the prize had been withdrawn, and we were unable to gain any information as to the veracity of the report or to get any replies to our letters. You will appreciate that after the expense we had gone to we were not over well pleased, but we had no option but to give up the idea altogether. The machine which we built for the prize is now in our school at Hendon, where it is known as the "White Caudron," and the same machine before leaving Scotland was used in giving very successful exhibitions at Renfrew, Hamilton, Alloa, Lanark, &c.

We had no wish to bring this matter up in any way, but it is impossible for us to allow your paragraph to go without contradiction.

THE W. H. EWEN AVIATION CO., LTD.,
W. H. EWEN, Managing Director.

[As stated in the paragraph, the communication was official, from the Secretary of the Scottish Aeronautical Society.—ED.]

Aviator or Avitor.

THE term *aviator*, meaning pilot, is hardly a well chosen derivation from *avis*, a bird, since a-viator might properly suggest one who has lost his way. "Avitor" has been suggested by Mr. Mervyn O'Gorman as a more justifiable expression. But for the fact that the French found themselves on the horns of a dilemma, making them call a "voleur" a thief, this is the word that would naturally have introduced itself into their aeronautical vocabulary.

An Exciting Adventure in Japan.

A CABLEGRAM from Tokio states that while Lieut. Takeda was piloting a biplane at the Tokorozawa Aerodrome there was an explosion, after which the machine caught fire. With splendid nerve, however, the pilot brought the machine down and escaped serious injury although the machine was destroyed.

From "Le Figaro."

"IT was very chic of that duellist to fire in the air."

"Very chic, do you call it? It is quite easy to see that none of your family are aviators."

Another Novavia Win.

FOLLOWING on the successes of Brindejonc des Moulinais and Guillaux on their Novavia-doped machines and the wins of the similarly treated machines at Monaco and Deauville, it should be noted that the Morane-Saulnier machine on which Hamel won the Aerial Derby last Saturday was doped with Novavia.

Hobson-Pognon Plugs in the Aerial Derby.

AFTER trying a good many plugs without getting satisfaction, Mr. H. Barnwell purchased some Hobson-Pognon plugs and fitted them to the Austro-Daimler engine, on the Martin-Handasyde monoplane which he flew in the Aerial Derby, to such good effect that the machine secured second place.

NEW COMPANY REGISTERED.

Green Engine Co. (1913). Ltd., 166, Piccadilly, W.—Capital £50,000, in £1 shares. Acquiring the undertaking of the Green Engine Co., Ltd. First directors, F. May, G. Green, T. O. M. Sopwith, and S. D. Begbie.

PUBLICATIONS RECEIVED.

Molesworth's Pocket-Book of Engineering Formulae. 27th Edition. London: E. and E. F. Spon, Ltd., 57, Haymarket, S.W. Price 5s. net; 5s. 3d. post free.

Announcements, Educational and Social, for the Session 1913–14. Northampton Polytechnic Institute, St John Street, London, E.C.

Aeronautical Patents Published.

Applied for in 1912.

Published September 18th, 1913.

15,075. W. H. NOSWORTHY AND S. J. PRESCOTT. Aerial machines.
17,362. J. G. A. KITCHEN. Flying machines.
19,746. R. J. ISAACSON. Carburettors.
29,482. H. GUERRE. Discharging bombs from aircraft.

Published September 25th, 1913.

20,427. T. DIETERLE. Flying machine.
22,254. E. KIKUT. Flying machine, having planes one behind the other.

Applied for in 1913.

Published September 18th, 1913.

12,241. G. R. STEWARD. Airships.

Published September 25th, 1913.

11,568. H. C. FISK. Stabilisers.

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